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CIRRHOSIS OF THE LIVER TREATED WITH PROLONGED SODIUM RESTRICTIONS

IMPROVEMENT IN NUTRITION, HEPATIC FUNCTION, AND PORTAL HYPERTENSION

Charles S. Davidson, M.D., Boston

Cirrhosis of the liver is characteristically associated with a moderate or a severe degree of undernutrition that is evidenced by wasting of muscle mass and loss of subcutaneous tissue. Massive ascites usually accompanies this state of chronic, severe liver disease, so that the patient with cirrhosis and massive ascites has been likened to a spider because of his large fluid-filled abdomen and spindly extremities. That this state of undernutrition in cirrhosis is often reversible was shown particularly by the classic work of Patek and his colleagues.[1] The complications of liver disease, such as massive hematemesis, hepatic coma, and, of more particular concern here, ascites requiring frequent paracenteses, has limited the effectiveness and possible duration of nutritional therapy, thus shortening the time available to permit improvement in nutrition and, presumably, in the liver disease.

Work from a number of clinics has demonstrated that sodium restriction when continuous and of sufficient degree will effectively control ascites formation and will sometimes lead to prompt diuresis and loss of fluid accumulation.[2] Many patients, however, do not have a prompt diuresis and loss of ascites when such a regimen is instituted but continue to have ascites although paracentesis is no longer required. My purpose is to present here the sequence of events of 30 patients with chronic cirrhosis of the liver and with ascites and edema, most of whom were undernourished and who were treated with an adequate diet restricted to approximately 200 mg. of sodium per day for periods of from a few weeks to two years. Evidence will be presented indicating that, with suitable cooperation of the patient and barring other complications, such a regimen, if persisted in, leads to loss of ascites and edema, improvement of the nutrition of the individual, and evidences of amelioration of the liver disease and portal hypertension.

MATERIALS AND METHODS

The 30 patients discussed were selected from the medical wards of the Boston City Hospital because of a diagnosis of cirrhosis of the liver with ascites and on the basis of a presumed ability to cooperate with the regimen prescribed. None was suffering at the time from other complications of liver disease. Of the 30 patients, 28 were known chronic alcoholics, but 2 clearly were not, although the cause of their disease was unknown. All patients were transferred to the metabolic ward in the Thorndike Memorial Laboratory for study except for three for whom the regimen was instituted on an outpatient basis. The patients admitted to the ward for study were followed for periods of from a few weeks to many months and subsequently were discharged to the outpatient clinic, where the regimen was continued. The diagnosis of cirrhosis of the liver was made on clinical grounds and was substantiated by biopsy or autopsy in several instances. Four of the patients were considered well nourished when first observed. In 16, undernutrition was moderate, and 10 were severely undernourished.

All patients studied on the metabolic ward were provided with a diet adequate in calories and protein (50-100 gm. daily) but containing approximately 200 mg.

From the Thorndike Memorial Laboratory, second and fourth medical services (Harvard), Boston City Hospital, and the Department of Medicine, Harvard Medical School.

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This work was begun in collaboration with Drs. A. M. Cooper, W. W. Faloon, and R. D. Eckhardt [2] and has continued with Drs. G. J. Gabuzda Jr. and H. S. Traeger.[2d]

1. Patek, A. J., Jr., and others: Dietary Treatment of Cirrhosis of the Liver: Results in 124 Patients Observed During a Ten Year Period, J. A. M. A. **138**: 543-549 (Oct. 23) 1948.

2. (*a*) Faloon, W. W.; Eckhardt, R. D.; Cooper, A. M., and Davidson, C. S.: The Effect of Human Serum Albumin, Mercurial Diuretics, and a Low Sodium Diet on Sodium Excretion in Patients with Cirrhosis of the Liver, J. Clin. Invest. **28**: 595-602, 1949. (*b*) Layne, J. A., and Schemm, F. R.: The Use of a High Fluid Intake and a Low-Sodium Acid-Ash Diet in the Management of Portal Cirrhosis with Ascites, Gastroenterology **9**: 705-717, 1947. (*c*) Eisenmenger, W. J.; Blondheim, S. H.; Bongiovanni, A. M., and Kunkel, H. G.: Electrolyte Studies on Patients with Cirrhosis of the Liver, J. Clin. Invest. **29**: 1491-1499, 1950. (*d*) Gabuzda, G. J. Jr.; Traeger, H. S., and Davidson, C. S.: Hepatic Cirrhosis: Effects of Sodium Chloride Administration and Restriction and of Abdominal Paracentesis on Electrolyte and Water Balance, ibid. **33**: 780-789, 1954.

of sodium daily. The diet used was that previously described,[3] with minor modifications. Essential for sodium restriction of this degree is a low-sodium milk product. We have used Lonalac with good success. Calculation of sodium content was made from published tables.[4] While the patients were under study on the ward, the dietitians availed themselves of the opportunity to teach them how sodium restriction could be maintained when they were discharged to the outpatient clinic.

The control of ascites formation by sodium restriction was shown by a constant weight and abdominal circumference and a relatively steady daily urine volume. When diuresis was rapid, body weight and abdominal circumference decreased and the urine volume increased. Slow diuresis usually was not reflected by perceptible change in urine volume, and weight loss was often masked by a concomitant gain in flesh. Methods used for laboratory determinations were standard or have been previously described.[5] Diets were occasionally analyzed for sodium, potassium, and nitrogen; the electrolytes were studied, after ashing, by flame photometry and the nitrogen was studied by macro-Kjeldahl analysis.

TABLE 1.—*Clinical Course of Thirty Patients*

Case No.	Age	Sex	Alcoholism, Degree and Duration (0-4+)	Estimated Previous Food Intake*	Duration of Ascites	No. of Paracenteses	Total Duration of Therapy	Duration Until Ascites-Free	No. of Paracenteses	Response to Sodium Challenge	Ultimate Results
					Group 1, Prompt Diuresis						
1	44	M	4+	F	1 wk.	0	13 mo.	2 mo.	0	Not done	Psychosis, unknown etiology
2	..	M	4+	F	2 yr.	"Many"	27 mo.	1 mo.	0	Not done	Alcoholism again Died in hepatic coma
3	59	M	4+	F	19 mo.	0	6 mo.	2 mo.	1	Tolerates	Lost
4	42	M	4+	P	6 wk.	0	1 mo.	1 mo.	0	Not done	Alcoholism again Died in hepatic coma
					Group 2, Moderately Delayed or Slow Diuresis						
5	53	M	4+	F	8 mo.	20	30 mo.	6 mo.	0	Tolerates	"Well"
6	55	M	3+	G	3 mo.	1	6 mo.	3 mo.	0	Tolerates	"Well"
7	42	M	4+	P	6 mo.	0	6 mo.	3 mo.	0	Not done	Lost
8	63	M	3+	F	4 mo.	1	4 mo.	4 mo.	0	Not done	Continuing
9	43	M	4+	P	7 mo.	9	38 mo.	16 mo.	0	Tolerates moderate sodium load	Alcoholism again
10	47	M	4+	P	3 wk.	1	8 mo.	5 mo.	0	Tolerates moderate sodium load	Died—coma after morphine
11	43	F	4+	P	6 wk.	0	9 mo.	3 mo.	0	Not done	Lost
12	57	M	4+	F	Unknown	1	24 mo.	9 mo.	0	Not done	Alcoholism recurred
13	63	M	0	G	3 mo.	14	12 mo.	6 mo.	0	Not done	Died—hematemesis †
14	54	F	3+	P	2 yr.	"Many"	27 mo.	14 mo.	0	Tolerates	"Well"
15	43	F	4+	P	3 mo.	5	17 mo.	13 mo.	0	Tolerates	"Well"
16	65	M	2+	F	4 mo.	1	36 mo.	9 mo.	1	Tolerates	Lost
17	65	F	4+	P	2 mo.	1	16 mo.	12 mo.	0	Tolerates	"Well"
18	45	M	3+	P	3 wk.	0	14 mo.	11 mo.	0	Tolerates moderate sodium load	"Well"
					Group 3, No Diuresis					Course	
19	70	M	3+	F	3 mo.	12	8 mo.	.....		Well controlled on ward, failed to cooperate OPD	Died, hepatoma
20	46	M	4+	P	½ mo.	3	6 mo.	.....		Well controlled	Died, upper GI hemorrhage
21	47	F	4+	P	2 mo.	5	¾ mo.	.....		Well controlled	Lost
22	52	F	4+	P	2 mo.	2	1½ mo.	.....		Well controlled	Died, upper GI hemorrhage
23	50	M	4+	P	6 mo.	9	1 mo.	.....		Well controlled on ward, alcoholism recurred	Died, coma
24	67	M	4+	F	2 mo.	2	2½ mo.	.....		Well controlled on ward, then lost	Died, coma
25	61	M	2-3+	F	1 mo.	2	3 mo.	.....		Well controlled on ward, then lost	Died, coma
26	64	M	2-3+	P	6 mo.	5	14 mo.	.....		Well controlled; ascites now slowly diminishing	
27	36	F	0	F	6 mo.	0	2½ mo.	.....		Well controlled	Died, hematemesis
28	47	F	3+	P	8 mo.	8	½ mo.	.....		Well controlled on ward, then lost	Died after hepatic artery ligation
29	59	M	2-3+	G	1 yr.	0	1 mo.	.....		Well controlled	Lost
30	50	M	4+	G	6 mo.	0	3 mo.	.....		Well controlled on ward but not in OPD	Died, upper GI hemorrhage

* G = good, F = fair, P = poor.
† Site of bleeding not found; not from varices.

RESULTS

The response of the patients to the adequate diet restricted in sodium described above was of three kinds (table 1): prompt diuresis, delayed diuresis (loss of ascites and edema only after prolonged sodium restriction), or failure. Diuresis began within a few days after

3. Davidson, C. S., and Gabuzda, G. J., Jr.: Medical Progress: Nutrition and Disease of the Liver, New England J. Med. 243: 779, 1950.
4. Sodium Restricted Diets: The Rationale, Complications and Practical Aspects of Their Use, Bulletin 325, Food and Nutrition Board, National Academy of Sciences—National Research Council, 1954.
5. Phillips, G. B.; Gabuzda, G. J., Jr., and Davidson, C. S.: Comparative Effects of a Purified and an Adequate Diet on the Course of Fatty Cirrhosis in the Alcoholic, J. Clin. Invest. 31: 351-356, 1952.

sodium restriction was instituted in four patients (group 1) and continued until each was free of ascites and edema (fig. 1). Fourteen patients (group 2) were maintained with ascites and edema but without paracentesis

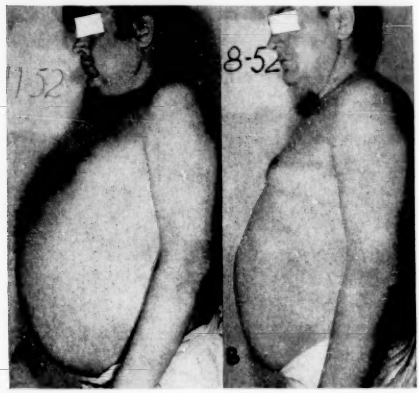

Fig. 1.—Prompt, continual but gradual loss of ascites from an alcoholic with cirrhosis of the liver. Other changes in habitus may be noted. *A*, April 11, 1952; *B*, July 8, 1952. Treatment was an adequate diet with about 200 mg. of sodium daily, after alcohol withdrawal.

for from 3 to 16 months by sodium restriction. During this time gradual loss of ascites and edema became evident and was usually attended by a striking improvement in nutritional status (table 2 and fig. 2, 3, and 4). Several

TABLE 2.—*Effect of Sodium Restriction on Nutrition and on Laboratory Measurements* *

Case No.	Nutrition †		Total Serum Bilirubin, Mg. per 100 Ml.		Sulfobromophthalein Excretion, % Retention		Serum Sodium, Mg. per 100 Ml.		Serum Albumin, Gm. per 100 Ml.	
	B	A	B	A	B	A	B	A	B	A
Group 1, Prompt Diuresis										
1	G	G	...	...	..	..	141	141	2.3	2.8
2	F	F	...	...	..	..	139	139	2.0	2.8
3	P	F	...	...	..	..	135	140	...	...
4	F	F	13.7	2.7	42	31	140	140	...	...
Group 2, Moderately Delayed or Slow Diuresis										
5	P	G	...	0.6	27	20	135	142	1.5	3.0
6	G	G	4.8	3.2	48	47	133	141	...	3.4
7	F	F	...	...	..	..	137	137	...	...
8	F	G	1.4	...	45	29	140	140	...	3.7
9	P	F	...	...	..	..	130	140	2.1	3.7
10	F	G	...	...	..	..	126	138	2.1	2.4
11	F	F	...	...	..	..	140	140	1.9	3.9
12	F	G	...	...	..	..	140	140	3.0	3.7
13	F	F+	...	...	..	..	135	144	2.0	2.3
14	P	G	...	0.5	..	17	...	...	...	3.1
15	P	G	0.6	0.4	20	7	118	130	2.7	4.4
16	F	G	...	...	..	..	...	...	2.8	2.8
17	F	G	3.6	0.6	48	53	140	140	2.6	4.5
18	P	G	2.2	0.7	47	28	138	138	2.8	4.1
Group 3, No Diuresis										
19	G	G	...	...	..	..	140	140	2.5	3.9
20	F	G	...	...	..	..	130	133	2.0	2.9
21	P	P	...	...	..	..	135	142	2.0	3.4
22	F	F	2.8	1.5	56	36	128	128	...	...
23	P	P	2.2	...	54	..	130	130	...	...
24	F	G	2.6	...	44	..	140	140	...	...
25	F	F	4.6	2.5	..	..	130	130	...	...
26	P	P	...	...	..	..	...	140	...	...
27	F	P	...	...	..	..	140	134	...	...

* B = before, A = after sodium restriction. For duration, see table 1.
† G = good, F = fair, P = poor.

patients required many months of sodium restriction before ascites disappeared. Improvement in liver function and a rise in serum albumin concentration were also frequently noted (table 2). The menses often reappeared as this improvement became evident, and the males usually noted an increase in libido and in body hair. Perspiration, usually greatly diminished when ascites is present, was often noted to return at about the same time. Evidences of portal hypertension were often seen to diminish: loss of ascites, decrease in visible abdominal collaterals, and reduction of splenomegaly (fig. 3, left two pictures, and fig. 4).

Twelve patients (group 3) failed to lose ascites and edema, although ascites formation ceased in every case. All but one of these had an inadequate trial of sodium restriction, due either to failure to adhere to the regimen, often with resumption of drinking, or, in two, to death from massive upper gastrointestinal hemorrhage.

Of the patients in whom a diuresis occurred, four have subsequently died (three of hepatic coma and one of gastrointestinal hemorrhage), five have been lost from the clinic, three of whom are known to be ascites-free although drinking again, and six are well. Ten of the patients who lost ascites and edema were allowed a moderate sodium intake (usually between 1 and 3 gm. of sodium daily) after diuresis had been completed and were found to be able to excrete these sodium loads normally.

Laboratory determinations when they were done both before and after sodium restriction and diuresis indicated improvement in each instance. When bilirubinemia was present, the concentration usually returned to normal or at least showed considerable improvement. Some

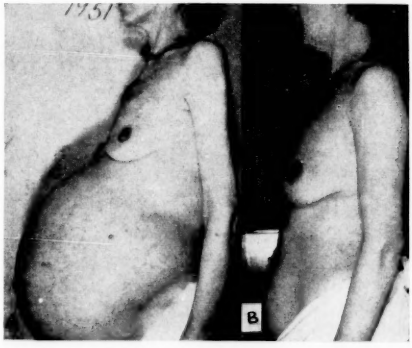

Fig. 2.—Gradual loss of ascites and marked improvement in nutritional status of patient with cirrhosis of the liver. Disappearance of abdominal collaterals is evident. Treatment was an adequate diet with about 200 mg. of sodium daily, after alcohol withdrawal. *A*, photograph taken April 5, 1951; *B*, taken March 21, 1952.

reduction in sulfobromophthalein retention was likewise noted in most instances in which the test was done on both occasions.

The serum sodium concentration was 135 mEq. per liter or below in six of the patients and during sodium restriction rose to 135 mEq. per liter or above. In every patient in whom diuresis occurred, the initial serum al-

bumin concentration was 3 gm. per 100 cc. or below, and in each of the 11 instances in which the measurement was made on both occasions, the concentration rose, reaching 4 gm. per 100 cc. or above in 3.

COMMENT

The results indicate that sodium restriction to approximately 200 mg. per day controlled ascites and edema formation in all of the 30 patients with chronic cirrhosis of the liver. This confirms our previous experience with this regimen and that of others. Prompt diuresis, however, was observed in only 4 (group 1) of the 30 patients, so that this favorable response can seldom be expected. It was necessary to continue sodium restriction for from 3 to 16 months until the remainder of the patients studied long enough were ascites-free. Six months or more was required in nine of the patients. The restriction of sodium intake was continued after the patients were ascites-free in almost every instance, sometimes for many months. After this, all nine of the patients to whom a moderate sodium challenge was administered were able to excrete the load, maintain sodium balance, and continue to be free of ascites. Presumably strict sodium restriction was unnecessary after ascites disappeared in the patients in whom it was continued; however, it was considered better not to alter the regimen too rapidly, particularly early in the study before the rapid regaining of sodium tolerance was realized. Usually liberalization of sodium intake was begun by increasing the meat allowance for the day. If this were well tolerated, regular milk was substituted for the sodium restricted milk product. Then regular bread and salted butter were allowed. Most of the patients continued not to use salt at the table and avoided highly salted foods.

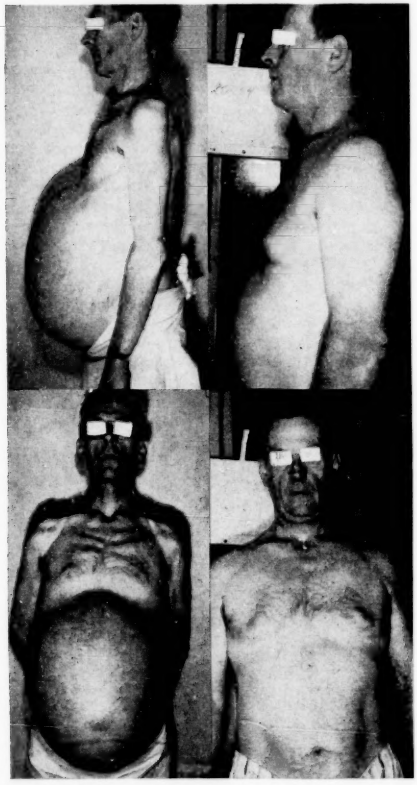

Fig. 3.—Gradual loss of ascites and marked improvement in nutritional status of patient with cirrhosis of the liver. Disappearance of abdominal collaterals is evident. First picture was taken Dec. 24, 1951, and last, Aug. 20, 1954. Treatment was an adequate diet with about 200 mg. of sodium daily, after alcohol withdrawal.

The improvement in nutritional status experienced by most of these patients was striking and usually coincided with evidences of improved liver function (see below), increased feeling of well being, and improved appetite. It was not possible to determine which of these changes came first. The results demonstrate that relatively severe sodium restriction even when prolonged and necessitating the use of a sodium-restricted milk is compatible not only with maintenance of adequate nutrition but also with a gain in body flesh and fat.

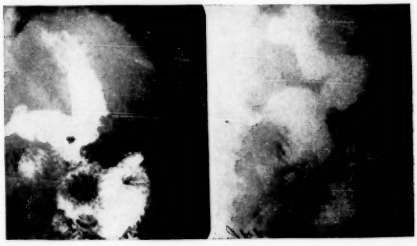

Fig. 4.—Roentgenogram of patient shown in figure 3. X-ray examination with barium shows the stomach pushed to the right by large spleen before therapy (left). Considerable shrinking of the spleen with movement of stomach to more nearly normal position is shown on right.

The improvement in serum bilirubin concentration, sulfobromophthalein excretion, and serum albumin concentration, together with the return of menses, increase in libido and in body hair in the males, and the return of perspiration, strongly suggest that continuance of the adequate diet with sodium restriction permitted improvement in liver function, presumably from liver regeneration.

Although it is possible to maintain patients with cirrhosis of the liver in positive nitrogen balance even when the disease is advanced, the positiveness of the balance usually increases as evidences of disease diminish.[6] Precisely how severe liver disease interferes with the laying down of body tissue protein is not known, although several disturbances in amino acid metabolism have been demonstrated. Increased urinary excretion of amino

6. Gabuzda, G. J., Jr., and Davidson, C. S.: Protein Metabolism in Patients with Cirrhosis of the Liver, Ann. New York Acad. Sc. 57: 776-785, 1954.

acids, although often present in patients with severe liver disease, is not great enough in extent to be limiting nutritionally. Improvement in absorption of protein likewise is not a factor, as stool nitrogen is not particularly increased in these patients.[6]

It is clear that the 12 instances of failure were due to incomplete follow-up, to failure of the patient to cooperate with sodium restriction after discharge from the hospital, to return to alcoholism, or to death from massive upper gastrointestinal hemorrhage or hepatic coma. Of the patients who sustained a diuresis, four have returned to alcoholism again; one died of hematemesis and three of hepatic coma, one after morphine administration; one developed a psychosis of unknown etiology; and four were subsequently lost from the series. Thus, only six remain well. It is evident from these results that, although ascites and edema can be satisfactorily controlled and as liver function improves the fluid accumulation disappears and the patient returns toward a more normal existence, the problems of chronic alcoholism and hepatic coma become the limiting factors in recovery and rehabilitation from cirrhosis of the liver.

The decrease in portal hypertension observed here might be considered to obviate the necessity for accomplishing this result by surgical means (e. g., portacaval shunt). However, to establish this concept firmly it will be necessary to show that esophageal varices disappear and do not bleed during treatment or after.

SUMMARY

The provision of an adequate but sodium-restricted (200 mg. daily) diet prevented the further accumulation of ascites of 30 patients with cirrhosis of the liver. Prompt diuresis occurred in 4 patients but was delayed (3 to 16 months) for 14 and failed to occur in 12. Prolonged therapy resulted in clinical evidences of improved nutrition and liver function and reduction of portal hypertension. A fall of serum bilirubin concentration and sulfobromophthalein retention and rise in serum albumin concentration were usually noted. This form of therapy for portal hypertension may be an alternative to surgical treatment in suitable patients if future study shows that as good or better results accrue.

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IMPROVED APPROACH FOR POSTERIOR UPPER THORACIC SYMPATHECTOMY

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The still popular and standard procedure for posterior upper dorsal sympathectomy was designed and described by Adson,[1] first in 1929 and again in 1931. Experimenting with midline, transverse, and hockey-stick skin incisions only to discard them, he finally adopted the well-known oblique paramedian skin incision. Irrespective of the site, incision is continued down only to the trapezius fascia, followed by undesirable division and separation of the large upper back muscles away from the midline to expose several centimeters of ribs and transverse processes. A large extent of rib and its entire transverse process must then be removed to permit the necessary additional excision of the resected rib neck and head. Distant from the midline, the parietal pleura is intimately applied to the ribs, intercostal muscles, and fascia; the intercostal neurovascular bundles are fixed in the concave costal surfaces, and the superior intercostal artery can occasionally become a problem.

These various architectural obstacles combine to make extensive exposure of the sympathetic chain, positioned immediately subjacent to the rib heads, an awkward, time-consuming, and perilous task. The needless gross muscle division and separation, which has always disturbed me, is also the source of the distressing and prolonged postoperative upper back discomfort almost routinely encountered by the patient, especially when sympathectomy is done on both sides. Other methods of sympathectomy are even more objectionable. The Schulze and Goetz axillary approach via the second intercostal space [2] is equally formidable and needlessly extensive, as are other transpleural procedures, especially when dealing with cardiac problems. Gaza's intercostal space ganglionectomy after transversectomy without rib resection [3] does not provide adequate visualization. Foerster's intradural operation and Guleke's extradural dorsal ramicotomy [3] are both unjustifiably hazardous and subefficacious. Although I was one of Adson's pupils, I have found his operation onerous and too time-consuming. Postoperative complications were too frequent and the morbidity too high for complacence and satisfaction. Accordingly, in October, 1951, I attempted the most direct approach to the upper dorsal paravertebral space and its contained sympathetics that I could conceive. Consisting of a limited upper dorsal costotransversectomy, via a midline laminectomy type of exposure, it proved so simple, speedy, and satisfactory in every regard that it was used in 14 other upper dorsal sympathectomies by myself and my late associate Paul G. Flothow, who previously commented on this technique.[4]

ANATOMIC CONSIDERATIONS

Anatomically, the most direct route to the dorsal sympathetics is via a midline laminectomy type of ex-

Read before the Neurosurgery Section of the sixth Pan-Pacific Surgical Association Congress, Honolulu, Hawaii, Oct. 15, 1954.

1. Adson, A. W., and Brown, G. E.: Treatment of Raynaud's Disease by Resection of Upper Thoracic and Lumbar Sympathetic Ganglia and Trunks, Surg., Gynec. & Obst. **48**: 577-603, 1929. Adson, A. W.: Cervicothoracic Ganglionectomy, Trunk Resection and Ramisectomy by Posterior Intrathoracic Approach, Am. J. Surg. **11**: 227-232, 1931.

2. Atkins, H. J. B.: Sympathectomy by Axillary Approach, Lancet **1**: 538-539, 1954.

3. Thorek, M.: Modern Surgical Technic, ed. 1, Philadelphia, J. B. Lippincott Company, 1938, vol. 2, p. 557.

4. Flothow, P. G.: Sympathectomy for Cardiac Decompensation and Coronary Disease, Surgery **32**: 796-802, 1952.

posure (fig. 1) for unilateral or bilateral sympathectomy at either one or two operations. Manifestly, but a portion of the transverse process and underlying rib neck need be removed. Two incisions are avoided, cutting and retraction of the large back muscles are obviated, lengthy extent of rib need not be sacrificed, the sympathetic chain is remarkably apparent medial to the

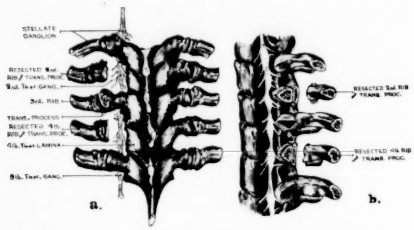

Fig. 1.—*A*, dorsal aspect of upper thoracic spine as seen at operation, illustrating limited costotransversectomy and accessibility of the sympathetics. *B*, oblique view, showing extent and location of rib and transverse process resection.

ventrad pleural reflection, and depression of the pleura with a lighted retractor is totally unnecessary. Illumination is excellent under ordinary operating room conditions, and the procedure is quickly and comfortably completed under direct vision rather than by a struggle laterally under a virtual overhang or shelf of tissue. The sympathetic chain is so accessible that the operator is at first likely to remove it in part when biting away the rib necks, not realizing its proximity (fig. 1). Although

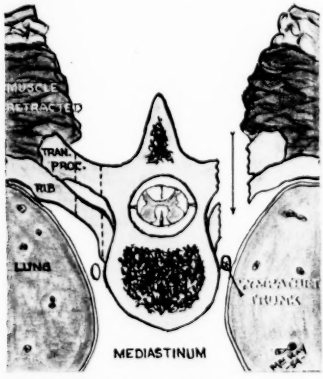

Fig. 2.—Cross sectional view of thorax at level of second rib, showing direct posterior approach to the upper thoracic sympathetics via a limited costotransversectomy and midline laminectomy type of exposure.

no precedent for this approach appears in the literature the orthopedists understandably overlooked this relationship in devising costotransversectomy drainage of tuberculous spinal abscesses. Neurosurgeons have likewise ignored this path to the sympathetics when performing similar procedures for the removal of dumbbell spinal tumors.

TECHNIQUE

It makes little or no technical difference whether sympathectomy by this approach is performed in the upright or face-down laminectomy position insofar as ease and comfort are concerned. I personally insist on the upright sitting position, however, in the firm and definite conviction that persons with cardiac disease, in particular, are thus given every physiological advantage. If such facility is not available, a lateral or oblique modified Sim's position is preferable to the usual full face-down position, which should never be used for a patient with heart disease.

A midline incision is centered over the second thoracic vertebral spine when sympathetic denervation is contemplated for upper extremity vasospastic conditions via resection of the second or third transverse process and rib for the Smithwick procedure, recalling that the second is the first palpable rib. If more extensive denervation for cardiac lesions is intended, incision is extended

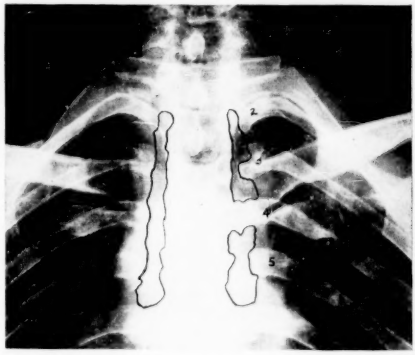

Fig. 3.—Postoperative thoracic spine, showing resection of four ribs and transverse processes on left and three on the right in patient with disabling coronary pain.

downward to the fourth or fifth thoracic spine. A typical subperiosteal exposure of the appropriate vertebral spines and laminas is done in the usual manner, on one or both sides. This maneuver is continued laterally, as for routine laminectomy, to the point where the bulbous tips of the transverse processes commence their dorsad upsweep (fig. 1*A* and 2), exposing the longitudinal gutter formed by the laminas and articular facets medially and the transverse processes laterally.

The root or stem of the transverse process, which is about 1 cm. in extent, is removed with an angular cranial rongeur, thereby uncovering the neck and head of the underlying rib medial to its articulation with the tip of the transverse process (fig. 2). In this plane, the ventrad reflection of the pleura has already begun and the intercostal neurovascular bundles are not yet intimately associated with the ribs. Nevertheless, as the transverse process is removed, the areolar tissue will be seen to rise and fall between the rib necks with each excursion of the underlying lung, but the pleura itself remains a safe distance removed. The intercostal, intertransverse, and

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costotransverse ligaments are quickly, easily, and safely stripped from the rib neck with a sharp curved periosteal elevator. Removal of 1 cm. of rib neck, leaving the articulating portion of the rib head in situ, immediately exposes the sympathetic chain, which is not adherent to the vertebral bodies at this level. Additional working space is unnecessary, but, if it is desired, more rib and transverse process can be readily removed medially with a Kerrison rongeur or a Gilpi perineal retractor can be positioned between the rib end and lamina. It is even quite possible to remove the sympathetics without removing any rib whatever, but this procedure does not adhere to sound surgical principles.

This technical presentation is not concerned with the indications for, nor the actual extent of, upper thoracic sympathectomy. I follow the Smithwick preganglionic procedure via the second or third rib for vasospastic conditions of the upper extremity, except for ligating and dividing the second and third intercostal nerves central to the thoracic root ganglions in lieu of avulsing the roots intrathecally. A short vertical midline or transverse incision leaves minimal traces, which women appreciate. Removal of ganglions T-1 through T-5 (or T6) bilaterally for anginal pain and/or decompensated hearts is necessary and easily accomplished by resection of the second and fourth transverse processes and ribs. The individual operator may also choose to remove the transverse process and rib of T-3 rather than work the sympathetic chain upward beneath it, although this can readily be done. If the removal of ganglion T-6 is also intended, it is better to resect part of the second, all of the third, and all of the fifth processes and ribs. Resection of any or all processes and ribs is permissible, and the amount resected varies with the surgeon (fig. 3). It is occasionally possible to remove the entire stellate (vertebral) ganglion via the second transverse process and rib, provided that gentle traction on the sympathetic trunk delivers it into the upper part of the exposure. The vertebral artery will then be visible anterior to the ganglion, clasped by its tentacle-like rami.

Closure is completed by anatomic approximation with interrupted silk sutures as for any upper thoracic laminectomy. There has been but a single instance of wound disruption in an early case in which catgut was used; the disruption was due to the patient's self-violence during a brief postoperative psychotic episode.

COMMENT

This is a virtually bloodless procedure possessing the main advantages of speed, directness, accessibility of the sympathetics, and avoidance of hazards and morbidity. In serious cardiac conditions, extensive bilateral sympathectomy performed with the greatest facility in the shortest time is of the essence. This is routinely accomplished by the described method in half the time (or less) required for unilateral denervation of but the upper three thoracic ganglions by the Adson approach.

In addition to the more obvious benefits and advantages of this new route, the patient is spared prolonged anesthesia, sustains less trauma, has a single midline incision, and enjoys early mobilization (one to two days) and discharge, which is currently of great economic importance. For me, this procedure is a pleasure rather than a chore, spares time and trauma to patient and surgeon alike, and thus far has not revealed any disadvantages.

Although this approach allows cervicothoracic sympathectomy, the anterior approach remains speedier, easier, and less traumatizing for removal of the stellate ganglion alone or for combined removal of the stellate ganglion and postganglionic resection of the second and possibly the third thoracic ganglions. This is especially true when a modification of the usual anterior approach is used.

SUMMARY AND CONCLUSIONS

A new and improved posterior approach to the upper thoracic sympathetics, used for unilateral or bilateral upper thoracic sympathectomy, has the following advantages: (1) single midline incision and laminectomy type of exposure without muscle division; (2) minimal transverse process and rib resection; (3) direct access to the sympathetic chain medial to the pleural reflection with excellent visibility by ordinary surgical lamps; (4) wound quickly and securely closed; (5) bloodless procedure without intrathoracic complications; (6) operating time decreased by at least 50%; (7) less trauma to the patient by conservation of time, tissue, blood, and anesthesia; (8) greatly diminished postoperative morbidity, allowing earlier ambulation and shorter hospitalization.

While no distinct disadvantage is known, postganglionic cervicothoracic sympathectomy by the modified anterior approach is preferable. This described technique has proved eminently satisfactory and gratifying in 14 cases of posterior upper thoracic sympathectomy (5 unilateral and 9 bilateral, eight patients with heart disease, four with Raynaud's disease, one with causalgia, and one with Ménière's disease).

1317 Marion St. (4).

Multiple Polyposis of the Colon.—[This condition is] characterized by the occurrence of numerous polyps throughout the colon and/or rectum. The polyps usually make their appearance during the first and second decades of life, but occasionally may not arise until the fourth decade or possibly even later. Although the polyps themselves may be associated with symptoms referable to the large bowel, the disease is of clinical significance primarily because of the tendency of one or more of the polyps to become malignant, with death from carcinoma of the colon or rectum at a relatively early age. The disease has long been known to have a familial distribution. . . . Approximately 10 per cent of all adults can be demonstrated by combined sigmoidoscopic and X-ray studies to possess one or more polyps of the colon. However, only a small fraction of these persons has true multiple polyposis. When appropriate diagnostic studies are carried out, there is seldom any problem involved in differentiating between the person who has hundreds or even thousands of polyps—and has multiple polyposis—and the person who has two or three, or even five polyps, but does not have the multiple polyposis with which this study is concerned. The two diseases with which multiple polyposis can most readily be confused are the so-called Peutz-Jeghers syndrome of diffuse intestinal polyposis and abnormal pigmentation, and the syndrome of polyposis of the colon associated with osteomatosis and fibromatosis. Both of these diseases are apparently much rarer than classical multiple polyposis.—T. E. Reed and J. V. Neel, M.D., A Genetic Study of Multiple Polyposis of the Colon, *The American Journal of Human Genetics*, September, 1955.

SCIENTIFIC BASIS FOR THE SURGICAL TREATMENT OF CORONARY ARTERY DISEASE

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and
David S. Leighninger, M.D., Cleveland

To understand the scientific basis for the surgical treatment of coronary artery disease it is necessary to analyze information obtained by experiments on dogs. One of us (C. S. B.) and his associates have done about 5,000 operations on the coronary blood vessels in the last 23 years, and these are the basis for this presentation. There are several variables inherent in this work, and it is appropriate here to state that these must be properly taken care of, otherwise erroneous conclusions will be made. A report on much of this experimental work has been published in THE JOURNAL.[1] In these experiments the reduction in coronary artery inflow was produced by placing ligatures around the coronary arteries. In the human, arteriosclerosis produces reduction in coronary artery inflow. The net result is reduction in arterial inflow. This is not a study of arteriosclerosis. Even if this disease could be produced experimentally in adequate numbers of dogs the occlusion probably could not be localized nor could the degree of occlusion be controlled with the precision demanded by the experiment, and as a method of investigation it would be inferior to the ligature.

The surgical treatment of coronary artery disease is based upon four considerations. 1. Operation adds 4.7 cc. of blood per minute (282 cc. per hour) to an area of myocardium made ischemic by complete ligation of the artery that normally feeds this muscle. This quantity of blood is of little or no significance if it is delivered to myocardium that is fed by a normally patent artery or if the artery is occluded by three-fourths of its diameter. But if the artery is totally occluded then this quantity of blood is protective. When the circumflex artery is ligated in a normal dog the average amount of blood available to the muscle beyond the ligature is 3.8 cc. per minute. Operation adds 4.7 cc. to this quantity, making an average total of about 8.5 cc. per minute. 2. This quantity of blood accomplishes three favorable results: It reduces mortality following test coronary artery occlusion, it likewise reduces the size of the infarct in these dogs that live following the arterial occlusion, and it provides time for additional blood to run into this low pressure area of occlusion from adjacent high pressure areas of myocardium. In a few days this ischemic but viable myocardium begins to contract. In 24 dogs the average amount of blood available to the myocardium beyond the ligature was 62 cc. per minute. 3. Of all the people who die of coronary artery disease about 90% die because the heart becomes electrically unstable. The hearts in these people are capable of continued function under slightly altered circulatory conditions, and these are the patients who can be helped by surgical operation. The remaining 10% of the patients who die from coronary artery disease have extensive myocardial degeneration, and these patients die in circulatory failure. Little or nothing can be accomplished by surgical operation in these patients (fig. 1). 4. The transfer of this information from the laboratory to the human patient is being made without conflict in the science.

From the Western Reserve University School of Medicine and the University Hospitals.

Read before the Section on Surgery, General and Abdominal, at the 104th Annual Meeting of the American Medical Association, Atlantic City, June 8, 1955.

This work was supported by grants from the United States Public Health Service and the Cleveland Area Heart Society.

The burs used in the number 1 operation are made by Kapp Surgical Works, 2004 St. Clair Ave., Cleveland.

1. Beck, C. S., and Leighninger, D. S.: Operations for Coronary Artery Disease, J. A. M. A. **156**: 1226 (Nov. 27) 1954.

ELECTRICALLY STABLE AND UNSTABLE HEARTS

An electrically stable heart is a uniformly well oxygenated heart. Emphasis is placed upon the uniformity of oxygen tension throughout the myocardium (fig. 2*A*)

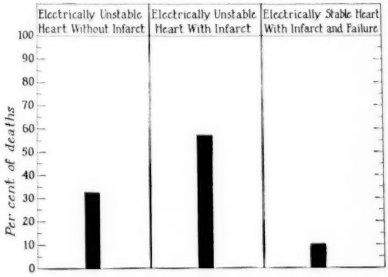

Fig. 1.—One-third of all victims of coronary artery disease have no infarct, either old or recent, according to Yater.[4] In this group, column 1, the hearts became electrically unstable. Approximately 10% of all victims die of circulatory failure. In this group, column 3, the currents incidental to progressive occlusions were never strong enough to fibrillate the heart and stability was maintained from one occlusion to another until failure supervened. Of the remaining 57%, column 2, both muscle damage and instability were present, and, in many of these specimens, the destruction of muscle was not so great but that continued function would have been possible were it not for the electrical potentials that destroyed the coordinated mechanism. In the first group of patients there was no muscle damage, and continued function was possible in this group, provided the heart remained electrically stable.

Stability persists when the oxygen tension is reduced provided the reduction is uniform throughout the myocardium. A uniformly cyanosed heart is also a stable heart, as indicated by observations made in our laboratory on about 60 dogs in which the intratracheal tube was clamped off for periods of six to nine minutes. The heart in these experiments became increasingly cyanosed; it dilated; the beat became weak, and then it stopped in standstill. In none of these experiments did the heart fibrillate. When oxygen was again delivered into the lungs and the heart massaged a few times a strong vigorous beat was restored. Thus the mechanism

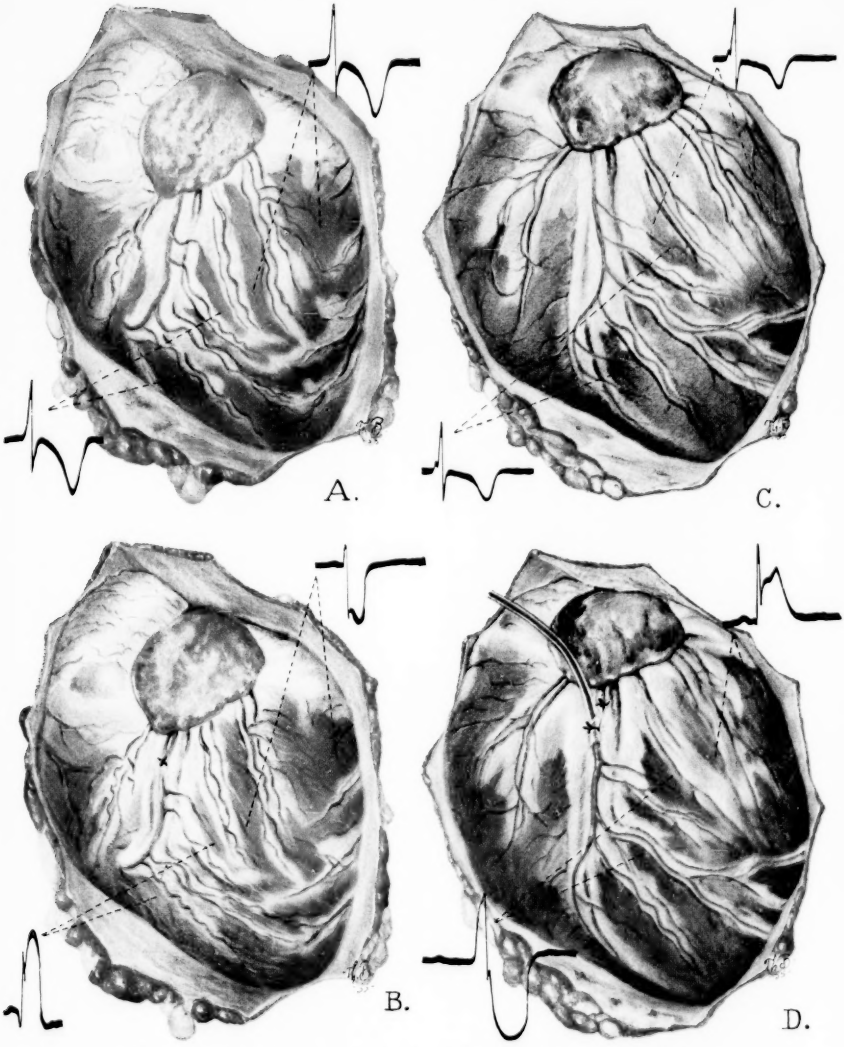

Fig. 2.—Dog hearts illustrating four conditions of myocardial oxygenation, with direct epicardial electrocardiograms demonstrating measurement of electrical potentials. *A* and *C* are the same heart; the one is uniformly well oxygenated, and the other is uniformly and severely cyanosed. These hearts are electrically stable as shown by the isoelectric S-T segment in each condition. *B* and *D* are electrically unstable because the oxygen tension in each heart is not uniform throughout. The S-T segment is depressed over the pink or well-oxygenated myocardium and elevated over the blue or cyanosed myocardium. These differences in potentials are often strong enough to fibrillate the heart. The term "current of oxygen-differentials" is introduced to replace "current of injury," which is obviously incorrect. A uniformly cyanosed heart is not an injured heart.

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remained coordinated as the heart changed in color from pink to blue and back again to pink. Direct epicardial electrocardiograms taken from the surface of the uniformly pink and the uniformly cyanosed heart are shown in figure 2*A* and *C*. The heart becomes electrically unstable and may fibrillate when the oxygen tension is not uniform throughout the myocardium. Thus a cyanosed area surrounded by well-oxygenated myocardium or a well-oxygenated area surrounded by cyanosed myocardium are conditions that produce electrical instability. These conditions are produced experimentally by ligation of one or more coronary arteries in a well-oxygenated heart and by delivery of pink (arterial) blood through a catheter in a coronary artery in a deeply cyanosed heart. The appearance of these two types of trigger and the electrical potentials from the surface of these hearts are shown in figure 2*B* and *D*. These differences in electrical potential from pink and blue areas measure 5 to 20 mv.[2] They are produced at the precise plane of contact between blue and pink and pink and blue muscle. They are produced by differences in oxygen tension, and we use the term oxygen differential to refer to this phenomenon. The term "current of injury" has been commonly used to refer to currents produced by ligation of a coronary artery, but this term is probably not correct. The terms stable and unstable heart are also of recent origin and seem to have a place in cardiac nomenclature.

No doubt the amount of current and the voltage produced under experimental conditions vary in different dogs. The same current may fibrillate the heart in one dog and fail to do so in another. In different dogs and under different conditions there appears to be a difference in what might be referred to as the threshold for fibrillation. The threshold for fibrillation is lowered by hypothermia in the absence of coronary artery occlusion, and in a series of experiments in which the descending ramus of the left coronary artery was ligated the heart fibrillated in every experiment, whereas under normal temperatures the incidence of fibrillation was 50%.[3]

Electrical instability leads to fibrillation and death in a large number of people. The classic example of this occurs in the man who goes out and shovels snow and in a few moments is dead. The exercise improves oxygenation of myocardium everywhere except in an area supplied by a coronary artery that is not normally patent although it may not be completely occluded. In some instances the arterial disease is slight. Under these conditions an oxygen differential is produced that in turn produces sufficient current to fibrillate the heart. Had this man remained indoors without this vigorous exercise the circulation of red blood into the myocardium would have been less brisk; the heart under conditions of rest would have been less pink; and the oxygen differential probably would not have produced sufficient current to have fibrillated the heart. To society the loss produced by these currents is incalculable. These currents occur in people who could live productively provided small alterations were present in the coronary artery circulation. One-third of all victims of coronary artery disease have no damage in the myocardium, either old or recent,[4] and many of the remaining two-thirds have heart muscle that probably could continue to function for years were it not for these currents. In about 10% of the victims of coronary artery disease these currents were never severe enough to fibrillate the heart; the patient continued to live, and the occlusive disease advanced to the point where extensive damage and failure occurred. It appears then that oxygen differentials of a fatal nature can be produced in the absence or in the presence of myocardial destruction. It also appears that myocardial destruction can proceed to the stage of failure without producing currents strong enough to fibrillate the heart. The production of currents and the destruction of muscle are both related to oxygen, but they are different biological processes. The purposes of surgical operation are to reduce these currents and to preserve viability of muscle although the occlusive process may proceed later on even to the point of cardiac failure.

SURGICAL OPERATIONS

The principles for aiding a crippled coronary circulation were previously presented in THE JOURNAL.[1] According to our experience the most important aid is provided by the presence of intercoronary arterial communications, so that a red blood cell entering the descending ramus or one of its branches can get over to the circumflex ramus or one of its branches, where it fulfills a more important function. The addition of blood from outside sources is less effective than the distribution of blood that is already in the coronary system. We tried to add blood to the heart in many different ways, one of which was to enter it through the coronary sinus system of veins in a retrograde direction. This method provides the greatest amount of protection of all methods that we tested, but retrograde flow tapers off in the dog after six to eight weeks and is replaced by a protective set of intercoronary channels. Whether retrograde flow tapers off in the presence of coronary artery-inflow disease in the human patient cannot be stated at this time. Other sources of flow from the outside, such as from parietal pericardium, mediastinal fat, lung, internal mammary arteries, chest wall, omentum, spleen, and intestine grafted upon the heart, are yet to be measured.

Considerable work on this subject has been done, and anatomic channels large enough to carry blood have been demonstrated between graft and coronary arteries, but so far measurements of flow have not been done. No doubt these measurements will be made, because methods for measurement are available and some of these surgical procedures may be found to be effective. For the present we have laid aside the operation that diverts arterial blood into the coronary sinus system of veins because the long-term condition of the circulation in the human heart will not be known until a number of specimens are examined. This operation is technically difficult. It requires two stages. It has a definite mortality

2. Brofman, B. L.; Leighninger, D. S., and Beck, C. S.: Electrical Instability of the Heart: A New Concept in Coronary Artery Disease, to be published.

3. Selman, M. W., and Brofman, B. L.: The Effect of Hypothermia on Survival Rates Following Coronary Occlusion in Dogs, Surgery **37**: 707 (May) 1955.

4. Andrus, E. C., and others: Coronary Artery Disease, M. Ann. District of Columbia **20**: 313 (June) 1951. Yater, W. M., Beck, C. S., Leighninger, D. S., and Brofman, B. L.: Symposium on Coronary Arterial Disease, Am. Rev. Tuberc. **71**: 904 (June) 1955.

and also some side-effects from the arteriovenous fistula produced by the operation. However, as stated above, it produces the greatest amount of benefit, and we might apply it in those patients who still have pain after the number 1 operation has been used.

The Number 1 Operation.—The number 1 operation consists of the following steps. 1. The lining of the parietal pericardium and the surface of the heart are

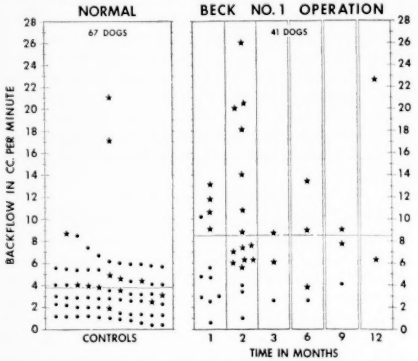

Fig. 3.—Mautz-Gregg backflow measurements in normal control dogs and in dogs upon which number 1 operation was done. Average in 67 normal dogs was 3.8 cc. per minute and in 41 dogs in which the number 1 operation was done was 8.5 cc. per minute. This increased backflow was present one year after operation. Star indicates that electrocardiographic evidence of protection was present, and solid circle indicates it was absent.

abraded or roughened by special burs. This produces mechanical trauma, which in turn produces inflammation and intercoronary arterial channels. We experimented with necrotizing chemicals for the removal of epicardium, but no satisfactory chemical agent has been found, and strong chemicals such as carbolic acid should not be used. 2. Application of 0.2 gm. of coarsely ground asbestos is made to the entire surface of the heart. This produces mild inflammation, which persists for a period of months and which in turn produces intercoronary arterial channels. We experimented with many different inflammatory agents, and asbestos is the most effective agent. 3. The coronary sinus is occluded to a diameter of 3 mm. Ligation of this vein is not beneficial when the arterial circulation in the heart is normal because it reduces arterial inflow, but when a major coronary artery such as the circumflex is occluded then ligation of the sinus affords protection against loss of coordinated mechanism, and it also provides for greater absorption of oxygen from the blood in the occluded vascular bed.[5] Ligation also aids in the development of intercoronary arterial channels. 4. Parietal pericardium and mediastinal fat is applied to the surface of the heart. This grafted tissue stimulates the development of intercoronary arterial channels and in some instances probably becomes the source of additional blood to the heart.

5. Gregg, D. E.: Coronary Circulation in Health and Disease, Philadelphia, Lea & Febiger, 1950.

6. Mautz, F. R., and Gregg, D. E.: The Dynamics of Collateral Circulation Following Chronic Occlusion of Coronary Arteries, Proc. Soc. Exper. Biol. & Med. **36**: 797 (June) 1937.

This operation has been well tested in the experimental laboratory. The protection of the number 1 operation in terms of mortality and size of infarct has been reported.[1] In normal dogs the mortality following complete ligation of the descending ramus of the left coronary artery at its origin in one step was 70%. In 30 dogs in which the number 1 operation was done and sometime thereafter the same artery was ligated, the mortality was 26.6%. This is a reduction of 43.4% produced by the operation. The hearts in each group that survived test artery ligation were examined and the size of the infarct measured. In the hearts that were protected by operation the infarct was 60 to 70% smaller than in the control group. In some specimens there was no gross infarct, and this was never observed in a specimen of the control group.

Backflow.—The Mautz-Gregg method of backflow yields important information and was used in many experiments.[6] This method consists of ligation of either the circumflex ramus or the descending ramus of the left common coronary artery. One of these vessels is ligated proximally and cut distal to the ligature. The amount of blood from the cut artery is the backflow. A third measurement of protection, which has also been reported,[1] consists of the response made by the circulation after test artery ligation, provided the animal lived and the heart muscle was not destroyed by the ischemia. Backflow measurements made in an artery that was occluded one day were 10.8 cc. per minute; two days, 42.0 cc.; three days, 68.0 cc.; and six days, 20.0 cc.; the average up to four months in 24 dogs was 62.1 cc. per minute. The important consideration here is the fact

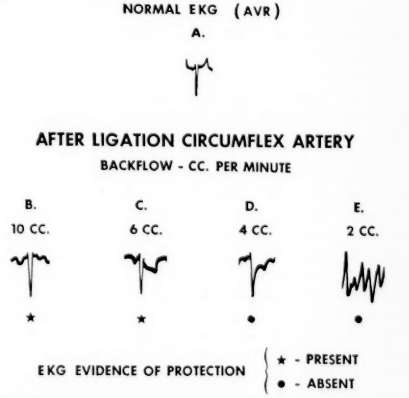

Fig. 4.—Relationship between electrocardiogram and Mautz-Gregg backflow.

that 4.7 cc. per minute of additional blood provided by operation carried the dog over the crisis of the arterial occlusion and also preserved the viability of myocardium. Under these conditions additional blood ran into the ischemic, low-pressure myocardium from adjacent myocardium where the pressure was higher, and later on this ischemic but viable myocardium had sufficient blood supply to restore contractility to this area of myocardium.

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Recent measurements obtained by one of us (D. S. L.) are presented in figure 3. In 67 normal dogs the average backflow was 3.8 cc. per minute. After the number 1 operation was done the backflow in 41 dogs was 8.5 cc. per minute, or an increase of 4.7 cc. This increase in backflow was found one year after operation, so that the improvement is probably of a permanent nature. The relationship between backflow and electrocardiogram is shown in figure 4. Any quantity of blood added to that which is already present is protective. When the total quantity of backflow is 6 to 10 cc. per minute the electrocardiogram shows S-T segment depression less than 2 mm. and is indicated by a star. When the total backflow is 2 to 4 cc. per minute it shows greater S-T segment depression or the heart may fibrillate, and this is indicated by a solid circle. The various components of the number 1 operation were measured, and these are shown in figure 5. Each component contributes something to the backflow.

Thompson [7] advocated the introduction of 4 to 6 gm. of talc into the pericardial cavity for the treatment of coronary artery disease, and backflow in such experiments is given in figure 6. The average backflow in 20 dogs was 4.8 cc. per minute. This figure is 1.0 cc. greater than the average normal but is 3.7 cc. less than obtained in the number 1 operation. Vineberg [8] implanted the internal mammary artery into the myocardium of the left ventricle for the treatment of coronary artery disease. This artery is ligated and severed, but an intercostal branch is left open. The artery is placed in a tunnel in the myocardium with the expectation that branches will develop from it and these branches will connect with the smaller branches of the coronary arteries. Backflow measurements were made, and the results are shown in figure 6. The average backflow in 20 dogs was 3.9 cc. per minute. This operation did not increase backflow measurements over the normal, and the measurements were about the same with the mammary artery occluded by clamping or not occluded. In these experiments there was no increased backflow even from intercoronary arterial channels. When the artery was severed the proximal end bled freely but the distal end yielded either no blood or less than one drop per minute. Vineberg stated that the implant should be made into ischemic myocardium for anastomoses to develop, and that was not done in these experiments.

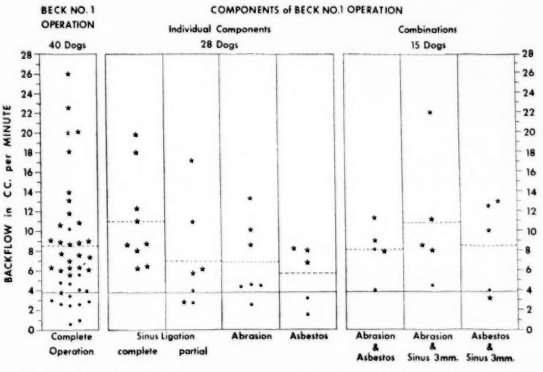

Fig. 5.—Mautz-Gregg backflow and various components of number 1 operation. Solid horizontal line indicates the average normal backflow. Broken lines indicate average backflow in each procedure. Each procedure adds something to backflow.

OPERATION ON PATIENTS

The patient is given 0.6 mg. of atropine sulfate and 10 mg. morphine sulfate one-half hour before being moved to the operating room and in the operating room is given 50 mg. of diphenhydramine (Benadryl) hydrochloride intravenously together with 0.4 gm. of thiopental (Pentothal) sodium and 60 mg. of succinylcholine chloride. He is given 100% oxygen for three to six minutes, and he is then intubated with a properly fitting cuffed endotracheal tube. Ether and oxygen are then given, and respiration is assisted until he breathes on his own. The next step is the intravenous administration of 10.5 mg. of tubocurarine chloride. The Rand-Wolfe mechanical respirator is used and is recommended. Nitrous oxide and oxygen, 5 liters of each, making a flow of 10 liters per minute, are given. A little ether is given, but usually curare and nitrous oxide maintain the anesthesia. The amount of ether used is about 2 to 3 oz. (60 to 90 cc.) per patient. We do not use rebreathing.

The drugs used are as follows: pentobarbital (Nembutal) sodium, 0.2 mg., given the night before operation; digitoxin (Crystodigin), 0.1 mg., given just before the patient is moved to the operating room; and desacetyllanatoside C (Cedilanid-D), 0.2 mg. given intravenously if the heart rate is over 110 beats per minute. This is repeated if necessary, or 0.4 mg. may be given in one dose. This digitalis preparation for intravenous use is an important aid in slowing the heart rate, and its use should not be overlooked. It requires 20 minutes to become effective. Atropine in doses of 0.2 to 0.4 mg. is given intravenously for nodal rhythm. Procainamide (Pronestyl) hydrochloride, 100 mg. diluted 10 times in saline solution, is given intravenously for ventricular extrasystoles. Tachycardia and S-T segment changes in the electrocardiogram are treated by stopping the operation for several minutes and oxygenating the lungs well. The lungs should come up well and then relax with each respiration. If the blood pressure falls, mephentermine (Wyamine) sulfate, 7.5 mg., is given intravenously and twice this amount is given intramuscularly.

The patient is placed on his right side with the left side up. If the blood pressure falls below 90 mm. Hg the operation is not started. Time is taken to observe the blood pressure. If the pressure remains below 90 mm. Hg for the next half-hour, the operation is not done

7. Thompson, S. A., and Plachta, A.: Fourteen Years' Experience with Cardiopexy in the Treatment of Coronary Artery Disease, J. Thoracic Surg. **27**: 64 (Jan.) 1954.

8. Vineberg, A.; Munro, D. D.; Cohen, H., and Buller, W.: Four Years' Clinical Experience with Internal Mammary Artery Implantation in the Treatment of Human Coronary Artery Insufficiency Including Additional Experimental Studies, J. Thoracic Surg. **29**: 1 (Jan.) 1955.

and the patient is not acceptable for operation. By experience we learned to regard this as a rule not to be broken.

The incision is placed between the sixth and seventh ribs, extending from a point about 8 cm. from the midline in front to a point about 6 cm. from the midline in back

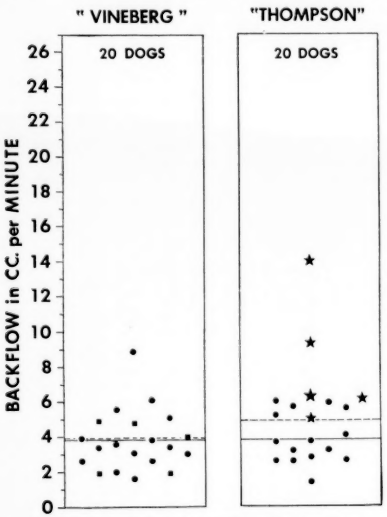

Fig. 6.—Mautz-Gregg backflow measurements in two groups of dogs. In one group the Vineberg procedure was done. Average backflow was 3.9 cc. per minute; in normal dogs it is 3.8 cc. per minute. In the other group the Thompson procedure was done. Average backflow was 4.8 cc. per minute, which is 1 cc. greater than normal.

(fig. 7). The ribs are spread apart by a self-retaining retractor for a distance of 12 to 14 cm. The pericardium is opened by an incision from apex to base about 4 cm. to the right of the left phrenic nerve. Traction sutures are placed in the pericardium and held up by the weight of a hemostat. The lining of the parietal pericardium is abraded everywhere by special burs. Another incision is made parallel to the first incision but to the left of the nerve, and a third incision splits the pericardium at right angles down to the coronary sinus. Traction sutures are applied to the cut edges of the pericardium (fig. 8). Exploration of the myocardium and coronary vessels is carried out. The common left coronary artery is lightly palpated by the right index finger. This vessel is normally patent, thickened but pulsatile, or it may be calcified. The descending ramus is palpated, as is also the first part of the circumflex ramus. The branches of these vessels are observed as to pulsation, beading, or streaking. The myocardium is observed for the presence of an infarct. The infarct is observed for size, location, and paradoxical pulsation. The coronary sinus is observed.

A point is selected between the middle and posterior veins of the ventricle. The epicardium just below the sinus is nicked with scissors, and a small opening is made and the tissues are gently spread with the point of a hemostat, separating the sinus slightly from its bed. A curved needle that contains silk is passed directly into the right auricle parallel to the sinus. This curved needle is then turned 90 degrees so that the point comes out of the auricle just superior to the sinus (fig. 9). The circumflex artery lies close to the passage of the needle, but with care it can always be missed. The ligature is tied around the sinus plus a stilet 3 mm. in diameter. The stilet is removed and partial occlusion of the sinus is accomplished (fig. 10). This ligation is done after the surface of the heart is abraded (fig. 11) and also after 0.2 gm. of coarsely ground asbestos is applied to the surface of the heart (fig. 12). The mediastinal fat is then brought into contact with the heart over as wide an area as possible, and the pericardium is loosely closed (fig. 13). A drainage tube is placed in the left pleural cavity and attached to a water-seal. If a cartilage is broken, it is carefully wired together. The sixth and seventh ribs are sutured with a wire. The soft parts are closed with silk. The patient is given oxygen intranasally or is placed in an oxygen tent for 24 hours and ambulation is started. The patient is discharged in about two weeks.

INDICATIONS FOR AND LIMITATIONS OF OPERATION

Operation is indicated in the treatment of coronary artery disease. Any patient in whom the diagnosis of this disease is established is a candidate for operation

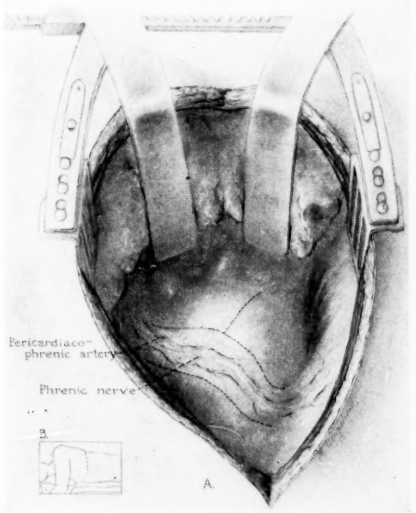

Fig. 7.—Left side of chest is opened by incision between the fifth and sixth or sixth and seventh ribs as indicated in the inset. The pericardial incisions are indicated by the broken lines.

provided the disease has not advanced to the point where the risk of operation is too great. Diagnosis will not be discussed. The problem is to determine the stage of the disease when the operation should or should not be

done. Patients with signs of failure, nocturnal dyspnea, and marked enlargement of the heart are almost automatically excluded. Patients with slight or moderate enlargement of the heart without failure are accepted. Operation is delayed in patients with rapidly increasing pain and disability because these symptoms may indicate progress of the disease and an impending infarct. If decision for or against operation is difficult, it is advisable to delay decision for several months after which reappraisal is made. Patients with status anginosus have been accepted. We prefer not to accept patients addicted to drugs, but in several patients this habit, if present, was broken. Operation is indicated early in the course of the disease rather than late. The experience usually has been that the disease is worse at the operating table than anticipated.

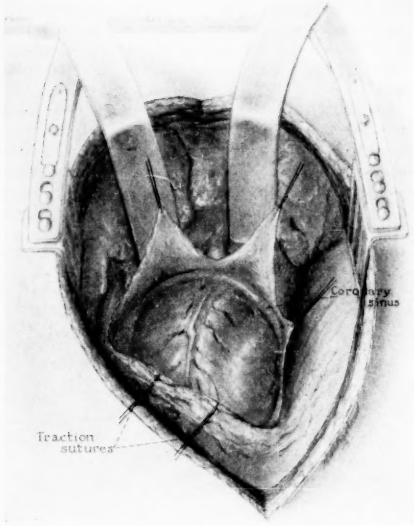

Fig. 8.—Pericardium opened for observation of coronary arteries, myocardium, and coronary sinus. Common left coronary artery and circumflex ramus of left artery cannot be seen but can be palpated. Right coronary artery cannot be seen or palpated.

After an infarct has occurred, a period of four to six months is given before operation is done. This delay serves several purposes. It affords time for intercoronary channels to develop after the low pressure bed has been established by the occlusion, and clinically it gives the patient time to "level off" so that his condition can be compared before and after operation. Also, electrical instability accompanies occlusion, and an anesthetic plus manipulation of the heart at operation may lead to ventricular fibrillation. This instability becomes less after the scar has formed and has become electrically inert. Another reason for delay applies to patients in whom one occlusion is followed by another. These patients have progressive arterial disease, and they are not candidates for operation. The disease is more likely to be progressive in patients in the 20's and 30's than those in the 40's, 50's, and 60's. The youngest patient operated upon was 27 years of age and the oldest 71.

The operation has limitations that, if properly understood, will make its beneficial effects more readily acceptable. It does not treat coronary arteriosclerosis; it

Fig. 9.—Placing a suture around the coronary sinus; *B*, needle penetrating the left atrium in a direction parallel and close to the sinus. Needle is then turned in a clockwise direction 90 degrees to emerge just superior to the sinus. Temporary traction sutures are in the fat to expose sinus.

treats alterations in inflow produced by the disease. It therefore does not reduce the disease in the arteries, nor does it stop its progress. It may become more marked after operation. A similar statement may be made about the myocardium. Operation does not re-

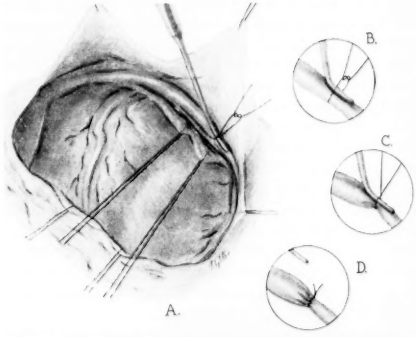

Fig. 10.—Partial ligation of the coronary sinus. The ligature is tied on a stilet 3 mm. in diameter, as in *A*, *B*, and *C*, and the stilet is removed after the ligature is tied, as in *D*.

store an infarct to functional myocardium; however, it does reduce the size of the infarct or even prevent the formation of an infarct if another artery becomes occluded. It is possible for the symptoms to become worse in a patient who has shown clinical improvement after operation. This is brought about by the progress of the

arterial occlusion, so that it is possible for the patient to be in worse condition clinically sometime after operation; yet the operation has saved the patient's life. The patient may die of coronary disease sometime after operation, but the experience so far seems to indicate that the operation prolongs life.

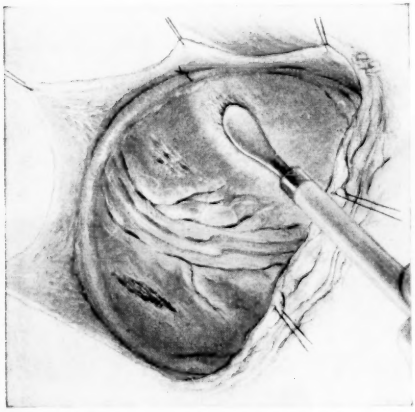

Fig. 11.—Epicardium removed by special burs. Necrotizing chemicals should not be used for this purpose.

RESULTS OF OPERATION

The results of operation can be determined by three measurements, as follows: (1) symptoms before and after operation, using the patient as his own control; (2) ability to work and to exercise, again using the patient as his own control; and (3) prolongation of life after operation. The first two items are shown in figure 14. Approximately 90% of the patients have less anginal pain or no anginal pain after operation. Several patients were operated upon who did not have any pain before operation, and these are not counted in these results. Some patients state that the angina is better three days after the operation. This improvement may be mental, but early changes in the circulation, as shown by experiment, do occur. When such mild therapy as a small quantity of whiskey or a glyceryl trinitrate (nitroglycerine) pill can reduce angina, it is not inconceivable that a few drops of blood to ischemic muscle could also give relief. As a rule the patient operated upon for coronary artery disease complains less of incisional pain than does the patient operated upon for mitral stenosis, and the incision in each is almost the same.

Some patients do not show improvement for several months after operation. The explanation for this cannot be given. A small percentage of the dogs failed to show increased backflow after operation. About 10% of the patients do not show any improvement after operation, and this aspect of the problem requires further investigation. Some of our patients are classified as salvage. These patients have severe arterial disease in the common left coronary artery or in each of the major branches of this artery. They also have extensive infarcts, sometimes with aneurysm of the myocardium. In these patients not only is the operative risk high but it is often difficult for us to understand how they can be helped by the operation, and yet some of the best clinical results are obtained in this salvage group.

The best results are almost unbelievably good. In some patients pain and disability are completely relieved. Such almost miraculous results are occasionally seen in patients without operation, and the explanation is the same as in the operated patients. Each patient develops a good set of intercoronary channels, one without operation, the other after operation, and the occlusive disease does not get worse. The end-result is the same. Indeed, operation accomplishes what nature can do but fails to do in a sufficiently large number of patients. In about 90% of the patients the ability to work is improved. Many of the patients return to jobs that they could not do before operation. It is gratifying to see this type of result; however, the patient is advised before operation that there is a good probability he will be better after operation but that he will not be cured of his disease.

It is difficult to make definite statements concerning the prolongation of life after operation. The arteriosclerotic process in the coronary arteries follows a variable and unpredictable course. These variable factors were eliminated in the experimental work because by use of the ligature the arterial occlusion was a known factor. In the dog it would be undesirable to reduce coronary artery inflow by the arteriosclerotic process even if it were possible to do so. This study of coronary artery occlusion would not exist if it were not for the fact that controlled occlusion by the ligature was used. It is a fact that a surgical operation can be done on a normal dog heart, and sometime thereafter a coronary artery can be ligated completely and in one step, and the dog has a

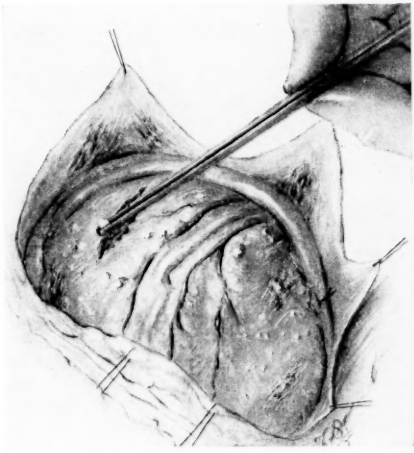

Fig. 12.—Sprinkling of an inflammatory agent (0.2 to 0.3 gm. coarsely ground asbestos) over the entire surface of heart.

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better chance to continue to live than it would had the operation not been done.

It is desirable to present information on the patients concerning arterial occlusion and mortality subsequent to operation, but it is scarcely possible to do this with the data available at the present time. Our medical cardiologist, Dr. Bernard Brofman, is working on this subject, and our belief is that arterial occlusion occurs after operation and the clinical evidence is often not adequate to make a diagnosis. This is favorable for the operation. It is likewise our belief that the operation prolongs life, but to prove this statement on a statistical basis requires two identical groups of cases. Lindgren reported mortality in a group of 88 patients who were acceptable candidates for sympathectomy for angina pectoris, but the operation was not done in these patients because of nonmedical reasons.[9] The mortality was 17%

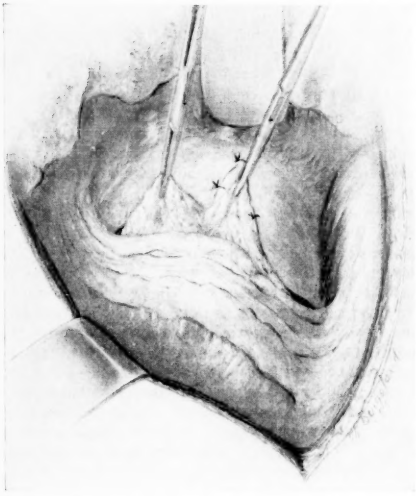

Fig. 13.—Pericardium partially closed. Mediastinal fat is used to cover the heart as much as possible. Here it is brought beneath the bridge of pericardium containing the pericardiacophrenic artery and vein. In most instances it is attached to the right border of this bridge of tissue.

the first year and 13% the second year, for a total of 30% for two years. These figures may be compared to our experiences, but the two groups probably are not strictly comparable. The operative and postoperative mortality with the number 1 operation in 75 patients was 6.6%. This mortality rate is lower than our previous figures. In the last 49 patients operated upon at Mount Sinai Hospital, Cleveland, the mortality was 2, or about 4%. The mortality in 136 patients occurring from the time of discharge from the hospital up to one year was 6.6% and in 83 patients from one year to two years was 4.8%. If these figures are added together the total operative and two year postoperative mortality is 11.4%, which is lower than Lindgren's figures without operation. We expect life to be prolonged by operation, and this is the most important purpose of our extensive studies on this subject. It is desirable to measure this aspect of the work by operating on alternate patients and determining mortality in both groups, but this is for the future.

SUMMARY AND CONCLUSIONS

Uniform distribution of oxygen to myocardium produces an electrically stable heart; lack of this uniformity produces an unstable heart. Differences in electrical potentials of the heart are produced by "oxygen differentials." The term "current of injury" is probably not correct. A uniformly cyanosed heart is not an injured or an unstable heart. With the number 1 operation for coronary artery disease, operative mortality has been reduced to 6.6%. The more important component of this so-called operative mortality is the disease rather than the operation. Operation relieves symptoms in 9 out of 10 patients. So far the trend of experience seems to indicate that operation prolongs life. Operation adds 282 cc. of blood per hour to ischemic myocardium, and this blood is present at the crisis of arterial occlusion. This is comparable to a transfusion of arterial blood into ischemic muscle. There is no experimental evidence to indicate that medical therapy adds or subtracts a single drop of blood to ischemic areas of myocardium. In view of this limitation the patient with coronary artery disease should be told there is a more effective treatment. Operation should be done early in the course of the disease before irreparable damage occurs in the myocardium.

2065 Adelbert Rd. (6) (Dr. Beck).

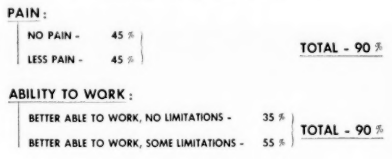
PAIN:
NO PAIN - 45 %
LESS PAIN - 45 %
TOTAL - 90 %
ABILITY TO WORK:
BETTER ABLE TO WORK, NO LIMITATIONS - 35 %
BETTER ABLE TO WORK, SOME LIMITATIONS - 55 %
TOTAL - 90 %
9 out of 10 Back to Work and Relatively Free of Pain.

Fig. 14.—Clinical results in 103 patients who could be evaluated six months or more postoperatively.

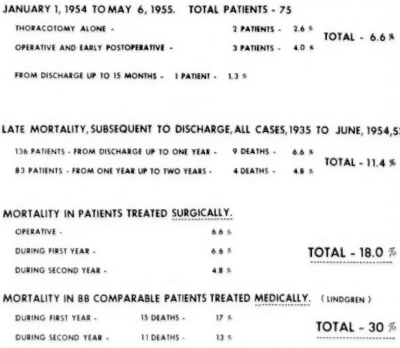
JANUARY 1, 1954 TO MAY 6, 1955. TOTAL PATIENTS - 75
THORACOTOMY ALONE - 2 PATIENTS - 2.6 %
OPERATIVE AND EARLY POSTOPERATIVE - 3 PATIENTS - 4.0 %
TOTAL - 6.6 %
FROM DISCHARGE UP TO 15 MONTHS - 1 PATIENT - 1.3 %
LATE MORTALITY, SUBSEQUENT TO DISCHARGE, ALL CASES, 1935 TO JUNE, 1954, 53.
136 PATIENTS - FROM DISCHARGE UP TO ONE YEAR - 9 DEATHS - 6.6 %
83 PATIENTS - FROM ONE YEAR UP TO TWO YEARS - 4 DEATHS - 4.8 %
TOTAL - 11.4 %
MORTALITY IN PATIENTS TREATED SURGICALLY.
OPERATIVE - 6.6 %
DURING FIRST YEAR - 6.6 %
DURING SECOND YEAR - 4.8 %
TOTAL - 18.0 %
MORTALITY IN 88 COMPARABLE PATIENTS TREATED MEDICALLY. (LINDGREN)
DURING FIRST YEAR - 15 DEATHS - 17 %
DURING SECOND YEAR - 11 DEATHS - 13 %
TOTAL - 30 %

Fig. 15.—Mortality in several groups of patients.

9. Lindgren, I.: Angina Pectoris: A Clinical Study with Special Reference to Neurosurgical Treatment, Acta med. scandinav. (supp. 243) **138**: 1, 1950.

DIFFERENTIAL DIAGNOSIS OF CHEST DISEASES

Andrew L. Banyai, M.D., Milwaukee

The problem of differential diagnosis of chest diseases may arise in medical practice in four ways. 1. Patients are seen by the physician because of symptoms referable to the chest. 2. Abnormal findings may be noted on routine chest x-ray examination on admission to general hospitals. 3. Abnormal chest findings are discovered on mass x-ray surveys and preemployment examinations. 4. Chest disease may be found in persons who are seen at periodic examinations on their own initiative or in groups, as in private industry and public institutions. The cardinal points of efficient diagnostic approach are: (1) accurate history (chronologic, environmental, occupational, and surgical), (2) thoracic and general physical examinations and correlation of pertinent findings to chest diseases, (3) interpretation of x-ray shadows in chest films, (4) expedient use of laboratory methods, and (5) adjunct diagnostic procedures. Symptoms that establish the first contact between patient and physician may serve, individually and collectively, as useful clues to considering appropriate means for correct diagnosis.

PULMONARY HEMORRHAGE

Expectoration of blood, particularly in large amounts, is often an alarming event. Assuming that one can rule out bleeding from peptic ulcer, esophageal varix, and the oropharynx, it is well to evaluate pulmonary hemorrhage in relation to the patient's age. Children, adolescents, and young adults should be scrutinized, first of all, for possible bronchiectasis, mitral stenosis, and tuberculosis. Persons 50 years of age or older, particularly men, should be studied for carcinoma of the lung and tuberculosis. Should this orientation fail, other possible sources of pulmonary hemorrhage should be explored. Some sources of pulmonary hemorrhage are given in the following four groups: (1) severe bronchitis (caused by infection, noxious fumes, gases and dusts, or allergens), benign or malignant tumors, lung abscess, bronchial ulcers, bronchial varicosities, broncholiths, and infestation with animal parasites; (2) cystic disease of the lung, pulmonary arteriovenous fistula, hereditary hemorrhagic telangiectasia, essential pulmonary hemosiderosis, and increased capillary fragility; (3) pulmonary infarction, myocardial failure with pulmonary congestion, sclerosis of the pulmonary artery, hypertension, and perforating aneurysm; and (4) aspirated foreign body, thoracic trauma, blood dyscrasias, perforation of abscess or tumor of adjacent organs and structures, and pulmonary manifestations of systemic diseases.

COUGH

Searching for the cause and origin of cough, one should consider affections of the respiratory tract and diseases of the heart. Respiratory diseases of this type include acute and chronic infections, allergic changes, and irritation of the mucous membrane by noxious fumes, gases, dusts, and tobacco smoke. Aspiration of a foreign body is usually associated with sudden gagging, choking, coughing, wheezing, and dyspnea. This episode may be followed by a symptom-free interval of one or more days and even months or years. Dislodgment of aspirated foreign bodies results in recurrence of these symptoms. There are a great many instances in which a history of aspiration is lacking, particularly in young children, in forgetful senile persons, and in cases when the accident took place under intense emotional tension or in unconscious states. Bronchospasm may provoke cough. It may be encountered not only in cases of allergic bronchial asthma but also in cases as the result of pulmonary infection, fibrosis, congestion (overt or latent), emphysema or irritation by aspirated foreign bodies, or broncholiths. Cough due to allergic bronchitis may precede asthmatic attacks by years. It may be easily mistaken for bronchitis caused by other factors. This type of cough may come on during the night only. Because of tenacious secretions, cough may be strenuous. Cough that is more pronounced at night should bring to mind heart failure, lung tumor (especially carcinoma), enlarged lymph nodes, and tumors of the mediastinum as possible provocative causes. In failure of the right ventricle of the heart, edema of the lower extremities decreases when the patient goes to bed. At the same time the lung becomes "water logged." An enlarged left auricle in long-standing mitral valve disease may exert pressure upon the left main bronchus and cause cough.

Cough occurring when the person changes position from erect to horizontal, stoops down, or bends over may signify spilling of exudate or foreign material from smaller into larger bronchi. Complaint of this sort may be heard from patients with bronchiectasis, infected lung cyst (congenital, dermoid, or parasitic), lung abscess, bronchopleural fistula, cardiospasm, and diverticulum of the esophagus. Cough on swallowing occurs in persons with developmental anomalies in the oropharynx, esophagotracheal, or esophagobronchial fistulas and in instances where there is a sensory or motor dysfunction of the laryngeal nerves. Increase in cough after meals is seen in persons with chronic lung disease. It is attributable to a reflex through which bronchial secretions are augmented in consequence of stimulation of the gastric sensory receptors of the vagus nerve. Recurrent episodes of cough in children should be scrutinized for allergy, bronchiectasis, tuberculosis, and aspirated foreign body. Children may have coughing spells after strenuous exercise. Their asthma may be mistaken for recurrent bronchitis or bronchopneumonia.

In cases of primary bronchogenic carcinoma, cough usually develops gradually. It may cause a change in the cough pattern of persons with "cigarette cough." It is persistent and difficult to control. There are some instances of lung cancer where the onset of cough is sudden and signalizes the presence of secondary lung ab-

Chairman's address, read before the Section on Diseases of the Chest at the 104th Annual Meeting of the American Medical Association, Atlantic City, June 8, 1955.

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scess. On the other hand, cough may suddenly disappear with the development of atelectasis distal to the neoplasm. Unproductive cough is observed when its cause is outside of the lung, as in diseases of the upper respiratory tract (postnasal drip secondary to paranasal sinus infection, partial nasal obstruction, enlarged tonsils, elongated uvula, swelling of the mucosa of the pharynx, larynx, and trachea, and tumors that may be encountered in this region), enlarged lymph nodes and tumors of the mediastinum, aortic aneurysm, and diseases of the pleura and the diaphragm. Also, patients may complain of unproductive cough in the early stages of lung infection (bacterial, viral, rickettsial, and parasitic) when there are considerable mucosal congestion and formation of viscous exudate, moreover, in allergy and with neoplasms of the lung and adjacent structures. Paroxysmal cough (fits of coughing) is seen not only in cases of whooping cough but also in cases of bronchial asthma, allergic bronchitis, and fibrinous bronchitis; in some cases of chronic bronchitis; and in cases of acute pulmonary edema, lung abscess, fluid-containing cysts, bronchial fistula during periods of evacuation of inflammatory material, aspirated foreign bodies, and broncholiths.

PAIN IN THE CHEST

Pain is a common subjective signal of organic disease. Chest pain may originate from diseases of the pleura, lung and cardiovascular system, from pathological changes in the mediastinum, esophagus, trachea, diaphragm, chest wall, and abdominal organs, or from other miscellaneous causes. The site of pain in pleurisy usually coincides with the site of maximum involvement. Patients with diaphragmatic pleurisy may complain of pain in the shoulder region because of transmission of impulses from the sensory receptors of the phrenic nerve to the cervical cord and from here to the neck and shoulder. Also, in these cases one may note tenderness along the costal margin and in the epigastrium. In some instances extensive pleurisy may exist without pain. In diagnosing pleurisy one should not rely on roentgenograms alone. Pronounced friction sounds may be audible in some cases of pleurisy without demonstrable changes in the x-ray film. In the latter small pleural effusion may not be seen unless a roentgenogram of the chest is taken with the patient lying on the diseased side. In large pleural effusions the liver may be palpable from 2 to 3 cm. below the costal margin. Children may have vomiting with pleural effusion. In adults exploratory thoracocentesis is preferably done at the eighth or ninth interspace in the scapular line, in children at the site of greatest dulness of the percussion note. Infralobar (supradiaphragmatic) and interlobar pleural effusions occur more frequently than is generally realized. Bacteriological, chemical, cytological, and other laboratory studies are mandatory for establishing the etiology of pleural effusions. In tuberculous pleural effusions from 75 to 100% of the white blood cells are lymphocytes, except in early phases of the disease when neutrophilic leukocytes may predominate. Long-standing transudates, nontuberculous exudates, pleural effusion associated with Hodgkin's disease, and rheumatic fever may show a predominance of lymphocytes.

Clinically significant hydrothorax is most often the result of heart disease, but it also occurs as a complication of nephritis and as a complication of tumors of the lung, pleura, mediastinum, and diaphragm. Pleural transudate is a characteristic finding in Meigs' syndrome. The pleural effusion is secondary to peritoneal transudate, caused by a fibroma of the ovary, and reaches the pleural cavity by diffusion through the lymph channels of the diaphragm. Ascites starting from other abdominal and pelvic diseases may be associated with hydrothorax. In heart disease the effusion is more frequently on the right side than on the left side. This is attributed to pressure of the greatly enlarged right aurical upon the pulmonary veins. Possibly, the larger pleural surface of the right lung favors the penetration of transudate. Thoracic pain originating from the pleura may be caused by infarction, primary and metastatic neoplasms, silicosis, asbestosis, spontaneous pneumothorax, hemopneumothorax, chylothorax, trauma, and formation of bronchopleural fistula. In spontaneous pneumothorax and in tumors of the pleura, pain may be precordial and angina-like. Parenchymal and interstitial infections of the lung (lobar pneumonia, bronchopneumonia, disseminated forms of virus pneumonia, and lung abscess) may result in chest pain. In some of these instances pain may be retrosternal and oppressive in character. Bronchitis and bronchiectasis may be associated with chest pain. The latter is brought about by pressure of accumulated inflammatory exudate upon the bronchial mucosa. In some of these instances pain may be pronounced, but it is relieved by adequate bronchocatharsis. Bronchial ulceration caused by infection or new growth may provoke pain in the chest.

Tumors of the lung may lead to chest pain either by direct pressure or by bronchial occlusion followed by atelectasis and infection. Sudden massive atelectasis from any cause is likely to be associated with thoracic pain. Other possible causes of this symptom are pulmonary congestion, broncholiths, air embolism, arteriovenous fistula, interstitial emphysema, bronchospasm with retention of secretions, and pathological alterations associated with systemic diseases. In many instances pain is exaggerated on deep inspiration (ponopnea) or on coughing. In lung tumors the pain may radiate to the arm. The significance of pain resulting from cardiovascular diseases cannot be overemphasized. Depending upon the medical history and physical, x-ray, electrocardiographic, functional, and other clinical findings, the following conditions should be given due consideration: coronary artery disease, mitral stenosis, aortic stenosis, myocarditis, pericarditis, aortitis, aneurysm of the aorta, dissecting aneurysm, ruptured aorta, coarctation, hypertension (systemic or pulmonary), neurocirculatory asthenia, and abuse of nicotine and coffee.

Almost any mediastinal disease may cause retrosternal pain, including mediastinitis and enlarged hilar and paratracheal lymph nodes caused by tuberculosis, severe generalized infections, fungous disease, sarcoidosis, infectious mononucleosis, syphilis, silicosis, diseases of the hemopoietic system, and diseases associated with erythema nodosum. Pain in the chest may be caused by benign and malignant tumors of the mediastinum; intrathoracic, nontoxic, nodular goiter; mediastinal cyst and

hernia; and perforation of the esophagus by a foreign body. Pain exhibited by patients with mediastinal tumors and intrathoracic goiter may be anginoid in character. Pneumomediastinum is likely to cause considerable chest pain together with dyspnea of various degrees.

Affections of the esophagus, with or without dysphagia are the sources of thoracic pain more frequently than generally realized. The discomfort varies from mild burning sensation to severe pain anteriorly or posteriorly. It may be localized in the midline or laterally. In some instances it is identical with anginal pain. In addition to esophagitis caused by infection or poisons, the cause of pain may be carcinoma or other tumors, foreign body, rupture, diverticulum, stricture, and megaesophagus. Anginoid pain may result from esophageal spasm at the cardia. Nonsphincteric esophageal spasm, between the upper and lower ends of this structure, may result in dull, or severe, shooting pain. Fluoroscopic examination, roentgenograms with contrast medium, and, if necessary, esophagoscopic examination reveal the nature of the disease. Hiatus hernia as a possible cause of pain in the chest is often overlooked. Pain originating from this source may be localized at the lower part of the chest, at the left costal margin, or in the scapular region. It is worse when the patient is lying down, particularly after heavy food intake. The pain may be angina-like, and it may radiate to the left shoulder and arm, but it is rarely provoked by physical exertion or by emotional distress. On the contrary, this type of substernal distress may be relieved at night by sitting up in bed or getting up and walking around. Diagnosis is established by roentgenograms of the esophagus with contrast medium with the patient in the Trendelenburg position and by other auxiliary x-ray methods. In standard chest x-ray film a curved linear density parallel to the left cardiac silhouette is suggestive of hiatus hernia. Awareness of this disease is of particular importance because of its increased incidence in advanced age and because mistaking it for heart disease implies faulty therapeutic management, uncalled for heart consciousness, and, possibly, loss of gainful occupation and needless invalidism.

Of other diseases that may cause pain in the chest, mention should be made of acute diaphragmitis (Joannides-Hedblom syndrome) and involvement of this muscle by trichinosis, in periarteritis nodosa, and in cases of benign and malignant tumors. Some patients with pseudohypertrophic emphysema of the lung complain of pain in the lower part of the chest. Most likely, the pain is attributable to hypoxia of the diaphragm and intercostal muscles. A great many diseases of the chest wall may cause pain that may be misinterpreted as originating from pulmonary or cardiovascular affections. In this category belong myositis, fibrositis, diseases of the interspinous ligaments, osteomyelitis, periostitis, and tumors or fracture of the cervical or thoracic vertebrae, the ribs, and the sternum. Moreover, one should keep in mind the possibility of herniation of an intervertebral disk in the cervical or upper thoracic spine, with pressure on the spinal cord, spinal arthritis, Tietze's syndrome, slipped costal cartilage, and suppurating intercostal lymph nodes. Herpes zoster may be associated with severe pain in the chest prior to its characteristic skin manifestations, thus simulating acute pleurisy. Mastitis, trauma, post-thoracotomy muscular imbalance, and spinal radiculitis are other possible sources of thoracic pain.

Pain originating from some of the abdominal organs may be referred to the chest through mediation of the major splanchnic nerves to the posterior root ganglions of the dorsal spine, anastomosis of branches of the superior mesenteric plexus and the phrenic nerve, or direct pressure upon the sensory nerve endings of the phrenic nerve at the lower surface of the diaphragm. Furthermore, it is known that lymph vessels of the gallbladder have connections to retrosternal and diaphragmatic lymphatics. Substernal pain simulating angina pectoris may be noted in diseases associated with distention of the biliary tract; in some cases of acute gastritis, gastric ulcer, duodenal ulcer, perigastritis, and periduodenitis; in distention of the stomach due to aerophagia; and in distention of the splenic flexure of the colon. Precordial pain may also result from pylorus spasm and pronounced gastric ptosis. In some of these instances pain may be referred to the neck, shoulder, and arm. In patients with peptic ulcer, thoracic pain may be exaggerated by coughing and it may be more pronounced at night.

Pain below the right scapula or in the right shoulder is of common occurrence in cholecystitis and cholelithiasis. Pancreatitis and carcinoma of the pancreas, hepatodiaphragmatic adhesions, sudden hepatomegaly due to congestion in failure of the right ventricle of the heart, liver abscess, and subdiaphragmatic abscess may cause pain in the lower part of the chest or in the shoulder. Acute and chronic appendicitis may be the source of pain in the right supraclavicular region. Also, in some of these instances pain may be elicited in this area by manual pressure at the right lower quadrant of the abdomen. In addition to an accurate clinical history, with special attention to the timetable of pain in relation to food intake, physical examination, electrocardiographic and x-ray studies, and other methods are necessary for correct diagnosis.

Thoracic discomfort varying from slight to severe pain may be encountered in other disorders. Precordial pain may be present in cases of hyperthyroidism, hypothyroidism, pernicious anemia, and severe secondary anemia. Pain may be referred to the chest in tumors of some of the cranial nerves, tumors of the base of the skull, neoplasms of the spinal cord and spinal nerves, supranumerary cervical rib, carotid sinus syndrome, and tabes dorsalis. Other diseases that may be associated with chest pain are scalenus anticus syndrome, epidemic pleurodynia (Bornholm disease), lead poisoning, hypoglycemia, thiamine chloride deficiency, and hyperventilation. In the subconscious mind of some individuals pain may serve as a disguised escape mechanism from distressing emotional or mental situations. Clarification of physical and x-ray findings in the aforementioned instances may require serologic, hematological, biochemical, metabolic, and other studies.

DYSPNEA

Dyspnea is regarded in most instances as a serious warning signal of disorders of the cardiorespiratory mechanism. Space does not permit a detailed considera-

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tion of dyspnea resulting from sudden occlusion of the air passages by an aspirated foreign body or of their gradual obstruction by neoplasm, goiter, aneurysm, cyst, and other mediastinal diseases. Severe thoracic trauma may interfere with normal respiration and circulation. Pulmonary ventilation may be gravely disturbed by poliomyelitis, myasthenia gravis, encephalitis, meningeal hemorrhage, and cerebellar tumors. Hemorrhagic, traumatic, and surgical shocks interfere with the normal rate of blood flow and cause dyspnea. Dyspnea may be the result of severe anemias and poisonings that disturb the transportation of oxygen to and utilization of oxygen by the tissues; it also can be caused by pressure of diaphragmatic hernia and by elevation of the diaphragm in ascites. Women may complain of dyspnea during the later part of pregnancy though the heart is normal.

In the symptomatology of dyspnea one should consider the possibility of sighing hyperventilation (hyperventilation syndrome), hyperventilation of nephritic and diabetic acidosis (central type of dyspnea), and shortness of breath due to pain in the chest. Special attention to the psyche of the patient may be of utmost importance, for anxiety, frustration, and other adverse psychogenic factors may cause subjective difficulty in breathing. The following conditions are common causes of dyspnea: infections and tumors of the lung and pleura, including various types of pneumonia; severe bronchitis; interstitial pneumonitis; atelectasis; extensive pulmonary fibrosis; congenital cystic disease of the lung; interstitial emphysema; pulmonary embolism; pulmonary hypertension; and pseudohypertrophic emphysema. Allergic bronchial asthma belongs in this category. Here dyspnea is attributable to bronchospasm, tenacious bronchial exudate that occludes the lower air passages, and consequent atelectasis and emphysema. Spontaneous pneumothorax and large pleural effusion represent loss of large respiratory areas of the lung and lead to dyspnea.

Pulmonary edema blocks the alveoli, thus interfering with oxygen and carbon dioxide exchange. Although it may result from inhalation of noxious fumes and gases, its most frequent source is failure of the left ventricle of the heart. Pulmonary congestion or edema from this source may be seen in the form of nocturnal cardiac asthma, evening dyspnea, dyspnea in the recumbent position, and exertional dyspnea. I have observed that in some patients with dyspnea on exertion, without basal rales on auscultation, prompt relief from this symptom was secured by digitalization and diuresis (latent pulmonary edema). Dyspnea may be observed in patients with paroxysmal auricular tachycardia, auricular fibrillation and fluttter, and pulmonary congestion due to mitral stenosis or to strain of the left ventricle resulting from acute glomerulonephritis. Another point that deserves special attention is the hitherto unrecognized high incidence of bronchospasm. As mentioned previously, it occurs in a great variety of lung diseases, such as allergy, infection, mechanical and chemical irritations of the air passages, pulmonary fibrosis, and emphysema. Experience has shown that bronchorelaxant drugs are bound to bring about salutary results in these cases.

CONCLUSIONS

Accurate diagnosis is the key to successful treatment of chest diseases. Thus, it is mandatory that the physician approach this problem with a wide orientation in medicine, an inquisitive mind, and sound logic. The welfare of the patient demands that the physician take full advantage of diagnostic aids derived from x-ray and laboratory studies. One should also avail himself of other diagnostic methods, such as skin testing, biopsy, bronchoscopy, and cardiorespiratory function tests as circumstances may require. It is inexcusable to omit a thorough physical examination.

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PROBLEM OF ECZEMA

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Among the major manifestations of allergic disease, eczema is a frequent problem in diagnosis and treatment. When the skin is the shock organ, it is as necessary to understand the important role of secondary changes as it is to recognize the allergic mechanism and the associated allergic factors. While a diagnosis of eczema is not characteristically difficult, the discovery of the etiological agents and actual management of the case can baffle the practitioner. This is derived partly from the persistence of certain ideas and practices that are contrary to observed facts and that disappoint those who attempt to apply them. With a knowledge of basic allergic principles and a common sense assessment of therapy, the disease should be less of a problem in etiology and its treatment, both symptomatic and specific, will become more successful.

The identification and limitations of eczema has been made difficult not only by a tendency to regard it as a skin disease but also by the use of many terms that confuse rather than clarify the condition. It is more accurate to regard the various superficial manifestations as different phases of a single process.[1] Of the many terms in use, "allergic" or "atopic dermatitis" is perhaps most descriptive but "eczema" has more historical support. The condition is not limited to childhood and is seen in every decade although it is not common in the aged.[2] Eczema is always bilateral and somewhat symmetrical. Not only is the classical flexural distribution seen in the bends of knees and elbows, but the exposed areas of the body are commonly affected. The face and neck and extremities may be partly or completely involved. Rarely,

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however, do the lesions invade the hairy scalp or the palms or soles. Occasionally, the trunk can be the site of lesions but only in association with the other areas noted. The earliest manifestation of the disease is actually an urticarial wheal that is quickly masked and distorted.[3] Pruritus of a persistent, agonizing, and exacerbating character causes constant scratching and rubbing and a traumatic alteration of the skin that totally submerges the initial urticarial phase of the lesions. Upon the thin and insubstantial skin of the infant and younger child, this itching and rubbing produces erythema, then vesiculation, and finally exudation of serum from the edematous, involved areas. Crusting is naturally associated with this process. When the skin of the older child and adult is submitted to this same incessant scratching and rubbing, it becomes leathery and lichenified and exfoliates constantly. Many crusts are seen as are local thickenings where healing competes with repeated injury. During severe exacerbations of this older group, areas may develop the same characteristics as in the infantile type. Eczema is the same disease in all age groups. Despite the differences in the duration of the scratching and variations in the age of the skin and its reactions, all are responses to the same allergic stimuli.[2]

Differential diagnosis is not a problem as a rule. Such diseases as scabies, psoriasis, dermatitis venenata, and id reactions to fungus disease may have a similar appearance in some cases, but they also possess characteristic features that will identify them. Contact dermatitis has been mistakenly associated with eczema possibly because of the frequent use of the misleading synonym "contact eczema." Actually, there is a great difference between the two conditions. The contact lesion does not represent an allergic phenomenon except in the most strictly local sense. The basic difference in the vast majority of cases depends upon a characteristic location of the lesion in relation to some contactant and a history that also incriminates this contactant as a cause. Allergic investigation is of no value in contact dermatitis, and even patch tests are so frequently falsely positive or falsely negative [4] that the diagnosis often rests upon the location of the lesion, the clinical history, and avoidance of contact. Parenthetically, we have made it a practice in lesions of this type to seal them completely with adhesive tape when their location permits, such as the fingers or hand. Thus covered for several weeks, the involved area will show dramatic clearing in many instances.

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DIAGNOSIS AND TREATMENT

The etiological diagnosis is the beginning of perplexity for many practitioners who attempt to care for the patient with eczema. Here is where the allergy history, the most valuable of diagnostic tools, can assemble pertinent facts and establish a continuity of events. In order to obtain a good allergy history, one must approach it free from prejudicial interpretation or anticipation of the facts one wishes to obtain. The statements of the patient must be accepted at face value and neither minimized nor emphasized to fit some preconceived theory. The most common failing in this category is to seek out and stress emotional factors. These patients are irritable and fatigued from sleepless nights of itching and scratching. Any psychoneurotic manifestations are understandably exaggerated, and any emotional upset will act as a trigger to start an exacerbation of the pruritus. This sequence of events is no more unusual in eczema than in any chronic disease state.[4]

It is important to seek evidence of other associated allergic phenomena in the history and physical examination. Not only does this lend support to the allergic character of the skin lesions, but the pattern of these other symptoms can give clues and relationships that may be obscured in the history of the skin lesions alone. Thus, an associated allergic rhinitis may have seasonal exacerbations suggesting that the skin lesions may also be partly the result of a pollen sensitivity. Both rhinitis and bronchial asthma are commonly seen, not only associated, but also alternating with the eczema over periods of months and years.[5] During quiescent or latent phases, it will be found that a blocked nose, rhinorrhea, or a cough and wheeze are present as persistent evidence of the allergic constitution. Infection also has an effect upon the course of eczema, and it has been observed that exacerbations will occur associated with the common bacterial infections. However, there is a pronounced tendency of the disease to subside or even temporarily disappear during the course of viral type disease, particularly the infectious exanthems.[6] Previous treatment of the eczema should be investigated, and it is often possible to relate exacerbations to a certain medicament or ascertain the failure of others. After seeing large numbers of these cases, one hears of remarkably few medicaments that have more than temporary value in the opinion of the patient who becomes a most critical judge as he continues to seek relief.

Skin Tests.—While great emphasis is given to the allergy history, it is equally important not to minimize the value of skin tests. Yet statements that disparage this procedure are seen, and many practitioners are unable to shake the doubt that such assertions create. Some believe that there is no value to skin testing [7] and that the patch test is the procedure of choice. They deny relationships with asthma and hay fever and believe that causal agents are rarely found or proved.[8] Statements of this character disappoint and confuse those who must encounter eczema in their practice and yet who lack the time and special experience to evaluate such concepts. Patch tests in eczema have been tried and discarded by all who have had experience with them.[9] The intimate association between eczema and respiratory allergy was

described as early as 1881.[10] Finally, skin testing in the hands of those who regard it as a corroborative procedure that supports and further delineates the history becomes a potent factor in the ultimate long-range treatment of the causes of eczema. The skin test will always disappoint those who demand from it a final answer to etiology. There is no test in the field of medicine whose results are better than the physician who interprets them. This is particularly true of the skin test procedure in allergy. Variables such as false positive or negative reactions or potency of the testing materials can only be assessed by the physician who measures his test results in the light of a detailed history of the case.

Elimination Diet.—The widespread use of the elimination diet as a diagnostic procedure is an attempt to reduce allergy diagnosis to a relatively simple procedure. Considerable experience indicates that the elimination diet cannot be related to the known facts of allergic disease and therefore does not supply the answers being sought. Food as a cause of eczema plays no larger role than it does in other manifestations of allergic disease where inhalant factors such as pollen, feathers, animal danders, and dust are at least as important.[11] The infant is the exception to this generalization, but the simplicity of its diet makes elimination procedures superfluous. In infants and younger children, there is the danger of malnutrition that has occurred with the use of the elimination diet. Such a hazard is less desirable than a skin condition in a well-nourished child. In an analysis of the test results in 4,589 cases of allergic disease, Piness and Miller [12] concluded: "The insidious appeal of what superficially appears to be not only a practical but a simple method of diagnosis and treatment probably explains the popularity of the method. . . . [Since] the elimination diet does not eliminate . . . pollens from the air and epidermals, etc., from the environment how can we say that the patient is being assaulted by no offending substance. One is as important as the other and yet it is only foods that are eliminated by the elimination diet, and individuals who are sensitive to foods alone are extremely rare. Our statistics show only one person in one hundred as being sensitive to foods alone." This and similar observations [13] indicate that this procedure has little value in allergic diagnosis.

Drugs.—Complications are not commonly encountered in eczema. The involved areas are quite resistant to infection considering the character of the acute lesions. When infection does occur, it is usually of a staphylococcic nature with a pustular appearance. Response to systemic antibiotics in adequate and maintained dosage is prompt, but the condition will recur if treatment is not prolonged several days beyond the clinical evidence of improvement. The local use of antibiotics is less effective and more likely to cause skin reactions. Occasionally, particularly in children, the lesions will be refractory to usual treatment and a low-grade temperature with an elevated white blood cell count is discovered without known cause. Such patients also respond to antibiotics and must be considered as secondarily infected. A relatively rare complication of eczema, yet one with serious consequences, is Kaposi's varicelliform eruption, which is an involvement of the eczematous areas with the virus of herpes simplex or of vaccinia.[14] An obvious and oft-repeated corollary to a discussion of this condition is the warning never to vaccinate in the presence of eczema. Treatment consists of supportive care and administration of chlortetracycline (Aureomycin), which has been shown to be of some value.[15] Finally, the most important and above all the most common complication observed in eczema is the result of treatment.[16] Dermatitis medicamentosa can be the result of innumerable topically applied substances and will produce a superimposed rash that is not always clearly discernible from the underlying disease. In such instances, there is often marked improvement with the cessation of all medication. Systemic toxic reactions may occur from a medicament applied to large areas of skin, particularly in the infant, where considerable absorption of the product may occur in water-miscible creams and ointments.

Symptomatic treatment of the patient with eczema should be related to an understanding of the factors that potentiate the pruritus both in the skin and in the patient himself. In addition to the whealing and edema produced by allergic causes, the presence of crusts and scales as well as exposure of the lesions to the air [10] intensify the discomfort. Relief of these mechanical factors is accomplished by the use of epsom salt baths and boric acid ointment. The baths may be used three or four times daily and during the night if needed, and, after drying, the patient applies the boric ointment liberally to the involved areas. It will be found that the baths remove the crusts and scales, and the ointment both lubricates the skin and, by coating it, protects from exposure to air. Persistence of this simple regimen often brings comfort and rest. In addition to the skin, the patient and his family also require treatment. Explanation and calm reassurance have a more salutory effect than ill-advised predictions that had probably been disillusioning on some previous occasion. Mild sedation such as phenobarbital or chloral hydrate may be used for emotional instability, but large doses seem to increase discomfort. Sleep will occur with the relief of pruritus, not with narcosis. The development of corticotropin (ACTH) and the adrenal steroids have not mitigated the problem of treatment in eczema.[17] While dramatic clearing of the lesions will often occur, disappointments are frequent and the invariable recurrence after cessation of therapy may be of greater intensity than the original complaint. There is growing evidence of

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the dangers of these substances,[18] and their use in ointment form does not justify the high cost of covering large areas of skin. In the last analysis, it is still necessary and ultimately more fruitful to seek specific causes for eczema.

COMMENT

Allergic management represents an interpretation of the history, the physical examination, and skin test results into a program of elimination and specific desensitization. The patient must understand the physician's objectives and the reasons for his own cooperation. There is a limit to the exclusion of foods from the diet. Those that produce clinical reactions have probably been eliminated already. But the removal of a wide range of items based upon literal interpretation of skin test reactions is unrealistic. It is more reasonable to suggest constant rotation of a wide variety of foods, thus reducing the exposure of any one in particular. Naturally, there are many cases in which the selective character of the test results indicate the need to remove a number of foods from the diet. The inhalant group is equally and sometimes more important than foods. Desensitization to pollen must be calibrated to the season and the botanical peculiarity of a given area. In the case of environmental factors, removal of offending substances, particularly from the bedroom, can effectively reduce the patient's exposure especially at night when he needs it most. Desensitization is also indicated here, when the perennial nature of the problem must be understood and stressed. These are the broad principles of allergic management that, when intelligently practiced, will bring comfort and relief to the patient with eczema and gratification to his physician.

SUMMARY AND CONCLUSIONS

Eczema, or allergic dermatitis, is not a problem if it is regarded as a skin manifestation of allergy intensified by prolonged scratching. Symptomatic relief of itching is most effective when simple medication is used. Certain practices such as patch testing and elimination diets are found to be of little value in handling eczema. The ultimate goal of therapy is discovery and treatment of specific causes. These are determined by a careful history corroborated by skin testing.

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THE GENERAL PRACTITIONER AND THE DISCHARGED MENTAL HOSPITAL PATIENT

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and
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One in every 12 United States citizens will spend some part of his life in a mental hospital. Each year over a quarter of a million mental patients are discharged to the community. Most of these discharged patients will require help. Under stresses some will relapse and some will develop psychosomatic illness; some will sit dejectedly on the communities' doorsteps; some will sullenly declare war on society; and some will adjust. Who is going to help these people? Continued outpatient therapy, social service follow-up, vocational rehabilitation programs, and family placement services exist. The discharged mental patient needs a society that will "count him in" through love, understanding, patience, and effort. Yet something more is needed. Knowledge and experience are needed to work with the mental patient. We shall have to depend upon physicians to furnish knowledge and to provide both individual treatment and community leadership. The psychiatrists, constituting about 4% of the medical profession, cannot do the job unaided. When patients leave our mental hospitals, the chances are 10 to 1 that they will seek the help of their family doctor in their readjustment to community living. What can the general practitioner do to help?

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KNOWLEDGE THE PHYSICIAN NEEDS

A basic knowledge of clinical psychiatry is important. For centuries some physicians have been doing a good job of handling emotionally ill persons without any formal training in psychodynamics. Such physicians have had a feeling for and an awareness of the basic needs and drives of human beings. They have intuitively understood the motivations of behavior. The doctor should be able to recognize psychosis and suicidal, homicidal, or psychopathic tendencies. The ability to take a good history results often in sufficient information from past behavior to permit some predictions about the future. The physician should know what therapies the hospital or the specialist has to offer, so that he knows when to make referral and what he can expect from hospital or psychiatrist.

The physician needs to know his patient. This includes his assets and vulnerabilities; his life goals and how he goes about achieving them; what he fears, loves, and hates; and where his breaking point appears to be, what situations lead him into attack, flight, depression, or physiological upheaval. How satisfactory an adjustment can a patient make at his best? How dangerous is he at his worst? What helps him? Of course, every person is so complex that one never collects all these data, but observation and repeated conferences will gradually increase understanding.

There is a need to know the patient's environment and its interaction with him. What persons are important to him and how does he feel about them? Who can assist him? Who might he blame for his troubles if he then becomes paranoid? What persons gratify and which ones frustrate his needs? Some families through undue anxiety, intolerance, anger, or motives of gain may exaggerate the patient's symptoms and press for his recommitment. Others may be overprotective or blinded by similar traits in themselves, being unaware of the severity of the illness. The physician needs to understand the prejudices, intentions, feelings, and viewpoints of the important figures in the patient's life so that he can assess what difficulties or help they are furnishing. There should be appreciation of the demands that the patient's environment makes upon him. Sometimes complaints of patients, seemingly bizarre, have an unexpected degree of reality. Whenever serious crime is committed in a community there is often a tendency to blame discharged mental patients, though their records show that they commit fewer crimes than the average of the population. The physician should know about community services and what they can offer patients.

The physician needs knowledge of himself. He needs an awareness of his own attitudes and feelings toward mental illness in general and each patient individually. There is a need for self-examination as to how he feels about the patient and whether he tends to overidentify either with the patient or with the community when there is friction. Some physicians are extremely intolerant of overdependency, lack of responsibility, or some form of childish behavior. Some react very unfavorably to any expressions of hostility or negative feelings and quickly decide that the community should be relieved of such a person. A physician may think of mental hospitals as horrible "snake pits" and feel excessive degrees of pity and sympathy for the patient, thus delaying necessary rehospitalization. He may feel antagonism to members of the family or an employer of the patient and tend to foster the patient's rebelliousness and refusal to readjust. Some physicians are overfearful about the threats of their paranoid patients and fail to realize that, after successful treatment in a hospital, these patients are often grateful. Patients who exhibit primitive emotional behavior or transgress social codes tend to build up anxiety and hostility in us from which it is very difficult to dissociate ourselves. For these reasons the mentally ill were burned as witches during the Middle Ages, and we still tend to locate our mental hospitals in isolated communities far from our best facilities for diagnosis and treatment.

The problems of the novel, unconventional, or "different" patient need thought. Many persons are immediately threatened by newness or difference. Great men such as Copernicus, Darwin, and Freud threatened whole societies by their challenging ideas. In less significant ways the maturing patient may shed old patterns, become assertive, show constructive hostility toward his relatives, loosen up his miserliness, drop excessive inhibitions, and break old ties.

THE PHYSICIAN AS GUARDIAN OF THE PATIENT AND THE COMMUNITY

The emotionally ill patient may endanger himself in many ways. Suicide is spectacular but less common than many mundane hazards. Patients may make unreasonable expenditures of money and fall into debt. They may expose themselves to injury through impulsiveness, inattention, or self-destructive urges. The dischargee's behavior may threaten the community. Aggressive sexual perversions, dangerous management of automobiles or other machinery, a need to exploit others, paranoid campaigns, or assaultiveness are common problems. These, however, appear to be less dangerous than community opinion assumes. The patient may endanger the mental health of his wife and children.

The physician must assume a reasonable degree of responsibility for both patient and community. At times these interests may conflict. The easiest course is often to seek the readmission of the patient to the hospital, but this expedient may be a serious setback to the patient's rehabilitation, justifiable only when the risk is real. The calculated risk takes courage, but has its place in all phases of medicine. Resourcefulness often permits a better solution.

The threatening behavior may stop when realistic dangers or consequences are pointed out with kindliness. A simple, gentle interpretation of apparent motives for behavior may put an end to it. Sedation or reassurance may reduce pressure so that there is a greatly lessened need to discharge anxieties in undirected behavior. Less dangerous outlets may be substituted. Bowling, boxing, walking, competitive games, or work may be excellent channels for aggression. The resourceful physician may enlist the aid of family, social agencies, psychiatrists, and friends in solving problems that are sources of hostility or anxiety, to help find constructive new directions.

When recommitment or return to the hospital is necessary, it is to be hoped that the physician has the kind of human relationship with his patient that enables the patient to accept the proceedings even if they are painful. Such a relationship comes from genuine interest and understanding between doctor and patient. If the patient is uncooperative, he may have to be returned to the hospital under restraint. A physician's resorcefulness in such situations can devise gentle and nondramatic methods for accomplishing this. Large doses of sedatives may minimize the unpleasantness of the transfer. Reassurance, kindliness, and firm but friendly insistence are much better than lost tempers, deception, or physical force. The physician may have many conflicts about commitment. In deciding about recommitment the physician's own feelings may be the greatest threat to objectivity. Overidentification with the patient or with hostile members of his community has been mentioned. He may realistically or unrealistically consider the local hospital a "snake-pit" and the psychiatrist a "crack pot." A visit to the hospital might confirm the doctor's notion, but, on the other hand, he might be pleasantly surprised.

Outdated pessimistic attitudes about the incurability of mental illness handicapped many physicians and their patients' treatment. Throughout history the mentally ill have stirred anxiety and then hostility. We feel uncom-

fortable with the mental patient and cover our anxiety with jokes. One reason there is so little education, medical teaching, and remedial action in the field of mental health is that people feel anxious and prefer not to think about it. Our thinking is often limited by lifelong attitudes. There is a tendency quickly to recommit a disturbing fellow.

THE PHYSICIAN AS THERAPIST

The doctor offers the discharged mental patient the same medical services that he offers the community as a whole. The mental patient is obviously subject to any of the somatic illnesses, and there are reasons why the emotionally ill are even more prone to physical illness. It is well known that schizophrenic patients show considerable susceptibility to tuberculosis. Diseases of malnutrition and anemia are common among psychotic patients. It has long been known that certain psychosomatic conditions may have a reciprocal relationship with psychosis. The patient with an ulcer may lose his ulcer during a psychosis only to regain it when the psychosis has disappeared. This reciprocity is seen in skin disorders, asthma, colitis, and migraine. It is common that the discharged mental patient whose psychosis has been alleviated may return to the community to develop a psychosomatic disorder. On the other hand, schizophrenic, hypomanic, and certain other types of psychotic patients do not show exaggerated bodily symptoms in a hypochondriacal way but actually may exhibit a strong tendency to minimize or fail to mention physical complaints. The well-known hypochondriacal neurotic patient who repeatedly returns to the physician's office may lead some persons to generalize that somatic complaints are always characteristics of emotional disorders.

Experienced psychiatrists do not take every physical complaint lightly merely because a patient has a neurosis or a psychosis. Not infrequently mental symptoms are initial manifestations of an underlying organic disease. Notorious examples are brain tumors, carcinoma of the pancreas, and the blood dyscrasias.

After the patient is discharged from the hospital the community physician who is keeping in close touch with him may realize that new symptoms reveal the presence of an unsuspected illness. Some doctors, anxious and nonaccepting of emotional disorder, search incessantly for demonstrable physical pathology. Their patients are aware of this search and are glad to avoid the acceptance of a psychotherapeutic relationship and the discomfort of searching themselves for unwholesome attitudes and emotions. This makes proper treatment progressively more difficult or even impossible.

TREATMENT METHODS IN GENERAL PRACTICE

Establishing Interpersonal Relationships.—Establishment of interpersonal relationships, essential for mental health, requires interest or regard and understanding. There are several ways to give help. The physician may directly help the patient make contact with others, encourage him to do so, or advise him how relationships can be maintained. Most important, the physician himself should establish a warm, friendly relationship with the patient. Through this experience the patient learns how to establish relationship with others. A common factor in mental illnesses is the patient's tendency to become paralyzed with anxiety and search endlessly about the same stereotyped circles for some solution to his difficulty. The physician with calmness and reassurance can decrease this anxiety and encourage imagination and resourcefulness in finding new approaches and solutions. These can often be suggested but more solidly come from tactful and insightful questioning by the doctor. On occasion it is necessary that authoritarian firmness be used with patients, but, in general, suggestion and permitting the patient to turn ideas over and make his own decisions are the most effective approaches. The physician must be a good listener.

Relieving Anxiety.—Relief from anxiety, undue tension, and pain are necessary goals. A physical examination made with confidence, thoroughness, and sympathy can be of great therapeutic value. The discharged patient can be reassured that he is not having another psychotic episode. The simple statement that all of us at times have depressive thoughts, panicky feelings, antisocial fantasies, and feelings of anger, envy, or jealousy can bring great relief. Appropriately used sedation can interrupt vicious circles and allow a much needed chance to rest. This helps reorganization to take place. Amphetamine (Benzedrine) sulfate may sometimes lift a depression sufficiently to permit a new solution to be found. Sometimes tension can be reduced by suggesting some outlets for aggressiveness such as bowling, walking, boxing, bicycle riding, or swimming.

Abreaction.—Abreaction, or the ventilation of strong feelings, is of great therapeutic value. If the emotional roadblocks that have produced the piling up of such feelings are not modified, they will of course reaccumulate and cause further difficulty, but their mere ventilation may relieve the patient. Paralyzing anxiety or inhibition may be sufficiently reduced by this means so that new insight, new outlooks, and new solutions are forthcoming. Very common is the frustrated patient who is too passive or too dependent to express his resentment to anyone he knows. It accumulates. He feels he must handle it by extreme guardedness (tension) or by projecting it on others and feeling that they are hostile or by turning it against himself in guilt, self-criticism, self-punishment, and depression. If the doctor can permit some discharge of this feeling onto himself, the patient may be much relieved. To do this a satisfactory relationship must exist, and the doctor must make the patient feel that it is permissible and acceptable to bring out some of his anger. This may be done by eliciting why the patient has heretofore been unable to express his anger. When they feel acceptance in the releasing of emotions, patients have made a great stride forward. Children express aggression and anger at all ages. These are biological as well as social matters; they are natural and necessary. The mature parent expects and accepts these reactions and patiently, understandingly, and lovingly applies social restraint and training and encouragement, gradually facilitating growth and self-control. The unlucky child is hurt, ridiculed, and rejected for his biological and uncooperative urges. He grows reluctantly, with resentment, rejects himself, and expects society to

reject him. He develops inferiority and guilt and feels alienated from himself and others. The parent has met the natural but unsocialized drives with anger and criticism instead of acceptance and guidance toward doing better. The physician can offer what the parent did not give.

Acceptance, of course, does not mean encouraging instinctual expressions beyond the age in which they are normal. The mental patient, in response to frustrations in his life, has gone backward to more childish, primitive, and archaic levels of behavior. He needs from the physician not the acceptance of his behavior but the acceptance of himself as a person. When he feels this he ceases to reject and hate himself. He can then find satisfaction in adult reality and repudiate his infantile motivations. He can begin to seek love and recognition for mature creativeness, giving, loving, and doing.

Achieving Balance.—The physician can help the patient achieve a balance between socially permissible satisfaction of basic human needs and reasonable social standards. In medicine we recognize the need for a balance between intake and output of fluids and calories. In psychology there is an analogous need to balance receiving and giving of love, praise, care, and pleasure. In mature living there is a balance between giving and receiving. The overdependent person can be brought to realize he can be loved only if he acts toward others in a way that evokes love, not by being sick, helpless, or martyred. On the other hand he may be unable to receive because he is afraid of being engulfed by his dependency or because he feels so guilty and unworthy. This may lead to renunciation of food, approval, sexual satisfaction, happiness, success, and even health.

Emotional depletion often results from a conflict between strong cravings and an overly strict conscience or set of ideals. The patient feels "I want but I ought not to want or have." When there is this conflict, the need for comforts, satisfactions, emotional support (the dependency needs) may produce shame, and self-denial may produce the anger of frustration. Anger results in guilt. Guilt and shame lead to self-punishment and renunciation of all satisfactions, which in turn produce more frustration and anger. This combination of dependency needs and shame leads to a need or even desire for illness or some other face-saving process or protection for dependency. This may be a mechanism in hypochondriasis.

Therapy requires opening avenues for reasonable satisfaction to reduce frustration on the one hand and on the other hand willingness on the part of the patient to be satisfied with realistic demands. Realistic means (1) what is reasonable to expect of an adult in our culture and (2) earned rewards for mature behavior and giving to others. In psychotherapy this may be accomplished by insight into guilt feelings and their purposelessness and the adoption of reasonable standards. The fear of dependent needs appears to be basic in psychosis. To protect himself the patient relegates these needs to the unconscious and may go to the other extreme of not asking for anything from anyone. This and the fear of his own anger may make him seclusive, ascetic, or coldly overcontrolled. He gets nothing from life. He may try substitute gratifications such as drugs, alcohol, overeating, or phantasy, or may feel justified in dependency only when physically ill. In some patients the conscience is temporarily abrogated, permitting some unacceptable or antisocial behavior. This is then followed by an unrelenting, intense self-punishment that is, however, ineffective in preventing a later recurrence of the same unacceptable behavior. Often the antisocial behavior is prompted largely by a rebellious need against the overly strict conscience.

Offering Information.—The physician can offer information. In addition to offering new solutions or ways to solution of conflict he can give simple explanations about psychology, about the nature of the human need for love, or about the reaction of hostility and how it can be handled.

Encouraging What Is Positive.—The physician needs to find and encourage what is positive in the patient. This involves encouraging and helping him to develop his natural talents by persistence, further education, or in any other way that occurs to him. Plans for constructive effort should not be discouraged. Successful psychotherapy cannot be done by merely pointing out what is negative. When the patient is discouraged, his achievements and abilities should be reviewed. Often the patient's self-defeating tendencies may cause him to relinquish progress along productive avenues, and these tendencies will then need to be interpreted. The patient needs help to find his assets and develop them.

Mediating Social Reintegration.—Finally, the physician can act as a mediator in social reintegration by (1) aiding the patient to find a place to live, a job, friends, and recreational opportunities; (2) dealing with unfavorable environmental factors; (3) cooperating with another physician if a psychotherapeutic program is being undertaken; and (4) educating the community in mental health and in constructive attitudes toward mental illness.

Except in unusual situations we would not consider psychotherapy successful unless the patient, if a man, had found gainful and useful employment; anchorage or a place to which he could belong; and friends, adequate relationships with other persons, and some philosophy of life. The patient can be helped in these things by a more active intervention on the part of the physician in his social milieu; at times this is the only method open to the doctor whose patient is unaccepting or unprepared for psychotherapy. The federal government, by a public law, provides for discharged mental patients on-the-job training, vocational guidance, job placement, books, tuition, transportation, and all other things necessary to prepare the dischargee for a gainful economic existence. The physician needs to be acquainted with these facilities. Sometimes it may be necessary to provide foster home placement or family care for the returning patient if his own family has disintegrated, lost interest in him, or demonstrated themselves incompatible with him. At times the physician can talk to employers, giving them some awareness of the patient's problems and helping them decide upon a suitable niche in a factory or business.

One of the commonest problems is to aid the family in adjusting to the patient. Sometimes the physician

serves not as psychotherapist but as an assistant or catalyst in connection with the patient's psychotherapy with someone else. This may require suppression of his own doubts, disapproval, or antagonism to the other therapist. On the psychiatrist's part it necessitates close collaboration, explanation, and interchange of ideas so that the physician may understand the goals and procedures. A discharged mental patient may have therapeutic ties to some physician at the hospital or sometimes just to the hospital itself, standing in his mind as a symbol for protection, health, and understanding. A physician who is aware of this relationship may preserve it and utilize it to the patient's advantage. A person may find it difficult to deal with the hostilities that build up toward his marriage partner. The most well-meaning wife may be distressed to find her paranoid husband constantly suspicious of her sexual fidelity. The physician can sometimes explain the patient to the family and achieve for him a greater degree of tolerance and acceptance. At other times he may find it necessary to advise them to treat the patient as a normal citizen rather than to overprotect or pamper him. Sometimes joint conferences between the patient, the physician, and the family are helpful in bringing to the surface unfavorable attitudes and working them out.

Often the community attitude is a source of considerable frustration and pain to the discharged patient. He may be met with distrust, suspicion, avoidance, fear, or well-meant oversolicitousness. There are so many existing misconceptions about mental illness that need to be dispelled. As physicians, this is our responsibility. The public must be educated to dispel notions that psychiatric illness is always caused by heredity, overwork, or masturbation, or that daydreaming or leading a "bad" life per se cause mental breakdown. In the minds of many there is still a stigma attached to mental illness, and many persons still feel that the mental patient has only to "shake out of it" or "forget it." Many states have excellent pamphlets or films explaining the basic principles of mental health. It is hoped that in the future the physician will accept increasing responsibility to attend parent-teacher, church, and other civic meetings where he will have an opportunity to bring correct and accurate information about mental illness before the public. This not only will aid in the rehabilitation and social reintegration of the discharged patient but will be of immeasurable value in prophylaxis for those in the community who have not yet been to a mental hospital.

SUMMARY AND CONCLUSIONS

Comprehensive medicine includes treatment of the patient as a person as well as of his cells and concern with his emotional instabilities as well as his chemical equilibrium. The patient is not an isolated object for physical and laboratory study but a psychophysiological organism reacting in a social context. Family, job, and friend relationships may be guided by the alert physician, thus helping the preservation of health and the prevention of illness or its recurrence. Social and psychological factors are important in the salvaging of the patient who has been in a mental hospital. The family doctor often has a greater opportunity in helping patients maintain mental health than does the psychiatrist. Three points should be emphasized: 1. Psychiatry must move out of the mental hospitals into the community. 2. The future general practitioner will practice more and more psychiatry. 3. There are areas and methods in which the general practitioner can function effectively in emotional and psychiatric problems.

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PAIN IN THE NECK AND SHOULDER, COMMON CAUSES AND RESPONSE TO THERAPY

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This report is based on a study of 800 patients with complaints of pain in the neck and shoulders and headaches, classified as "cervical syndromes." Patients having this particular type of complaint were studied because, although their problem is common, I feel that such patients are often not properly handled in both diagnosis and treatment. Frequently these patients are told there is nothing wrong with them because there are no marked x-ray or neurological findings. However, when the condition persists or progresses after a period of weeks or months or even years, everything from herniation of the nucleus pulposus in the neck to brain tumor is considered; and the patients are submitted to a multitude of tests, including myelograms, arteriograms, pneumoencephalograms, electroencephalograms, and ventriculograms. Rarely does anyone take the time to palpate the neck muscles or check range of motion of the neck before making tests. Certainly negative tests are of help in reassurance of the patient, but one wonders if they are necessary in many instances. For example, in my experience proved herniation of the nucleus pulposus in the neck comprises only a very small percentage of cervical problems.

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Read before the Section on Physical Medicine and Rehabilitation at the 104th Annual Meeting of the American Medical Association, Atlantic City, June 8, 1955.

COMMON SYMPTOMS AND FINDINGS

Symptoms and findings, with certain exceptions to be mentioned, were remarkably similar for all patients. As already mentioned the most common symptoms in this entire series were neck and shoulder pain and headaches. These were not necessarily associated. Headache was usually occipital but often involved temporal or parietal regions. It could be constant or occur in sharp twinges. Pain, paresthesia, weakness, and sensory changes in the arm and hand were also common symp-

toms. Less common were face pain, earache, blurring of vision, dizziness, and chest pain. Often definite psychogenic symptoms were present, such as globus hystericus, gastric upset, fainting spells, and a general anxiety state.

Findings usually included tense neck muscles, with limitation of rotation, lateral bending, and flexion. Tender areas were present in a high percentage of cases and were either nodular or in the form of rigid strands. X-rays frequently showed reversal of the normal lordotic curve with limitation of motion of a portion of the cervical spine and often gave the appearance of a subluxation. Some physicians have a tendency to overemphasize these x-ray findings and treat the patient by rigid immobilization in a collar or brace. In my experience this serves only to fix the condition in the patient's mind, and, although it may give temporary relief, compounds the problem of treatment when it becomes necessary to overcome the effects of prolonged immobilization.

ANALYSIS OF CASES

At first glance, all patients fell into one of two main groups: those with a history of relatable injury (328 patients) and those without injury (472 patients). The group with relatable injury was broken down according to four types of injury or accident. 1. One hundred thirty-nine patients received injuries in auto accidents. These injuries usually occurred when the patient was in a stationary car that was hit from the rear, the resulting whiplash motion causing strain of the patient's neck muscles. 2. Ninety-four patients received direct injuries to the head and neck. The majority of these injuries were sustained while the patient was either at work or engaged in sports activities. 3. Forty-nine patients were injured in falls. The greatest number of such injuries were found among construction workers who fell off scaffolds at varying heights. 4. Forty-six patients received indirect injuries. These were caused in numerous ways, often quite bizarre. For example, one lady caught the feather of her hat in a door, one man hurt his neck when his finger was yanked, and another was butted by a ram when he was bending over.

The time elapsing between injury and beginning of treatment varied from one day to several years. Many patients gave a long history of mild intermittent pains that were greatly aggravated by the injury. I feel that the discomforts complained of were not necessarily caused by the injury in all cases, but in each case the patient was convinced that the injury was responsible. Most patients in this group were those eligible for compensation insurance payments. Many others had complaints with definite psychogenic features after injury. An extreme example is that of a woman who developed headaches, with no physical basis, after she was beaten over the head by her husband. It was interesting but not too surprising to find that in this entire group of 328 patients, only 57, or 17%, had associated demonstrable injuries such as fractures.

The 472 patients without history of injury were divided into five groups: 1. Eighty-eight patients had acute cervical fibrositis or myositis. The typical history in this type of case was one of cervical symptoms occurring only a short time before treatment was started. Frequently there was a drawing of the head to one side, usually described as a "crick in the neck" by the patient. Results of treatment in this group will be discussed separately from results in the other groups, since treatment time and prognosis were found to be entirely different from all the others. 2. Thirty patients had advanced cervical osteoarthritis. This group included only patients with appreciable hypertrophic spurring of the vertebra and narrowing of the intervertebral disks as revealed by x-ray. Most of these patients had radicular symptoms aggravated by extension of the neck. Obviously, this group would have been much larger if all patients with minimal osteoarthritis had been included. 3. Thirteen patients suffered from scalenus syndrome. The main complaint in this group of patients was paresthesia and pain along the ulnar aspect of one or both arms, with varying degrees of cervical symptoms. Some had typical cervical ribs. Scalenus maneuvers were positive in all cases given a diminution of pulse on turning of the head to the unaffected side or on downward pressure on the arm. 4. Twenty-four patients had a herniation of the nucleus pulposus in the neck. This group included only those patients having symptoms typical of the disorder accompanied by demonstrable organic findings, such as weakness, atrophy, sensory changes of radicular type, reflex changes if the appropriate dermatome was involved, and preferably changes in the myelogram. These objective changes were considered of paramount importance in making a definite diagnosis. Pain and paresthesia down the arm associated with limitation of neck motion, cough and sneeze effect, functional weakness, and sensory changes were found not to be pathognomonic of herniation. When myelograms were obtained in such patients for compensation claim purposes, many were found to be negative. Therefore, these patients were included elsewhere and not considered as a part of this group. 5. Three hundred seventeen patients had "tension neck." This was by far the largest group in the entire series. In these patients typical cervical symptoms were associated with environmental factors producing tension. No attempt was made to psychoanalyze the patients, but many facts were volunteered by the patient or discovered on routine questioning.

DISTRIBUTION BY AGE AND SEX

Distribution by age is shown in figure 1. The distribution curves were very similar for injury and noninjury groups, with a definite sharp peak between 30 and 50 years of age. As a matter of fact, 57% of all patients in the series were in their 30's or 40's. Distribution by sex is shown for the main groups in figure 2. Roughly, 60% of the total group were women and 40% were men. In the injury group, there were more men (55%) than women (45%). This was especially true for direct injuries, which involved over twice as many men as women. Auto accidents were the only type of injury that included more women than men. In contrast, in the noninjury group, 70% were women and only 30% men. This difference was most marked in the tension group, where women outnumbered men by more than three to one.

TREATMENT

Methods.—Treatment for cervical syndrome in general consisted of the application of heat, usually shortwave or microwave diathermy for 30 minutes, deep stroking and kneading massage, and, if tolerated, frictional massage. Except in the very acute cases, this was followed by vertical traction in a Sayre head sling according to the method of Hanflig,[1] which combines traction for one to three minutes with gentle manual rotation starting with approximately 30 lb. and with gradually increased amounts. All patients were given supervised active neck exercises. Particular stress was placed on rotation and lateral bending, with avoidance of extension. In addition, some patients received stimulation by a tetanizing current from a low-voltage stimulator in an effort to relax the tense neck muscles.

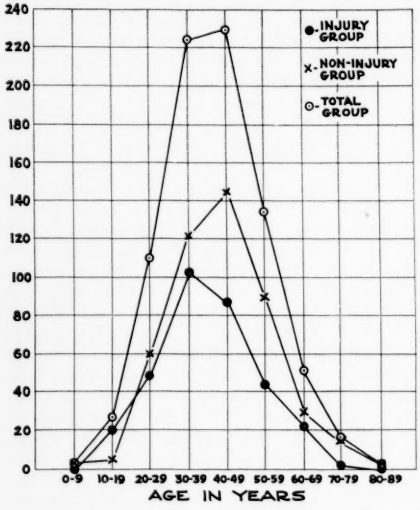

Fig. 1.—Distribution by age, showing numbers of patients in each decade for the main groups, of those having cervical disorders.

Evaluation.—Results were analyzed according to the degree of improvement in relation to the type of case, to the duration of the complaint before treatment, and to the duration of treatment. Average treatment times were also determined. Degree of improvement was defined in one of three ways: (1) good improvement, requiring marked or complete relief of symptoms with corresponding improvement in objective findings, (2) moderate improvement, signifying a variable amount of subjective relief but a definite change in objective findings; and (3) no improvement. A number of patients in each group of this series were not available for evaluation of final results. These included patients sent to the physiatrist primarily for diagnostic or disability evaluation, persons instructed in home treatment, and patients who discontinued treatment on their own before evaluation could be made. These cases were omitted from the statistical analysis to avoid confusion.

1. Hanflig, S. S.: Pain in the Shoulder Girdle, Arm and Precordium Due to Foraminal Compression of Nerve Roots, Arch. Surg. 46:652 (May) 1943.

Improvement in Relation to Type of Involvement.—The degrees of improvement for the main groups are shown in figure 3. When the group with acute fibrositis was analyzed separately, the results for the remaining noninjury group were remarkably similar to those of the injury group. In the injury group 40.3% showed good improvement, 47.1% moderate improvement, and 12.6%, no improvement. In the noninjury group, 41.9% made good improvement, 38.5%, moderate improvement, and 19.6% no improvement. Results for the subdivision by specific complaint of these two main groups of patients except those given a diagnosis of fibrositis were essentially similar to these averages. They were analyzed individually, but the figures are not included here because some of the groups were too small to be significant. In marked contrast to approximately 40% good improvement in these groups, there was 90.9% good improvement in the group with fibrositis. The percentages for moderate improvement and

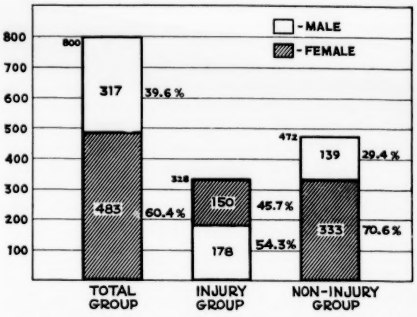

Fig. 2.—Distribution by sex, showing numbers and percentages of men and women for the main groups, of patients having cervical disorders.

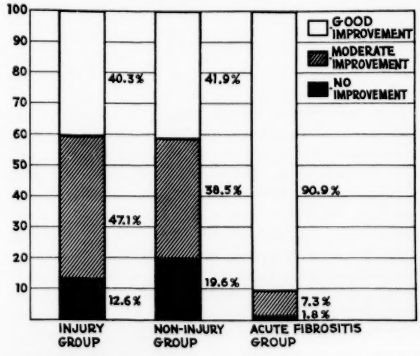

Fig. 3.—Degree of improvement in patients with cervical disorders, with those having acute fibrositis in a separate group.

no improvement were correspondingly lower than in the other groups: moderate improvement, 7.3%, and no improvement 1.8%.

Average Treatment Duration.—Determination of the average time of treatment further demonstrated this difference in results. For the injury group, treatment time varied from a few days to over one year. Average treatment time was four to five weeks, and mean treatment time was three to four weeks. By the end of five weeks, 68.4% of patients had been dismissed. For the noninjury group, treatment time varied from a few days to 34 weeks. Average treatment time was three to four weeks, mean treatment time two to three weeks. By the end of four weeks, 75.4% of patients had been dismissed. For the group with acute fibrositis, duration of treatment was measured by individual treatments rather than in weeks. Treatment time varied from 1 to 29 treatments. Average treatment time was 7.7 treatments; mean treatment time was 5 treatments. Sixty-two per cent of patients were dismissed by the end of eight treatments.

Improvement in Relation to Duration of Complaint.—The length of time elapsing from the onset of the complaint until start of treatment had minimal effect on the degree of improvement. Contrary to our expectation, there was no striking difference in results. Improvement was slightly better in the group treated less than one month after onset than in those treated from one month to one year later; results in the group in which treatment was started over one year later were slightly inferior. Patients with acute fibrositis are not included here because of the short duration of complaint.

Improvement in Relation to Duration of Treatment.—The effect of the duration of treatment on the degree of improvement was also insignificant. Again, there was no marked difference in results. There seemed to be no optimal treatment time. The percentages of the different degrees of improvement obtained in later weeks were quite similar to those obtained for the first few weeks. The group with acute fibrositis is not included in this analysis because of the short treatment time.

COMMENT

One of the most striking findings in this study was the dramatic response of patients with acute fibrositis to only a few treatments. This fact must be kept in mind by anyone evaluating methods of treatment for cervical problems. The response of these patients to simple conservative measures is so prompt that it will upset results of studies of treatment of cervical disorders unless patients with this condition are considered as a separate entity. I feel that results for this group would probably have been even better if those patients who discontinued treatment without consultation could also have been included in the study.

I was surprised to find a marked similarity between the group of patients who had been injured and those who had no history of injury. It must be remembered that in private hospitals these latter patients had to pay their own treatment fees, while most of the former were being compensated. The results obtained strengthen my belief that the one factor common to both groups was tension and that an injury was often the precipitation factor producing or aggravating a tension state. A vital factor in the treatment of these patients that should be mentioned is an explanation of the mechanism of the pain. The idea that muscle tension from any cause produces pain and pain in turn produces muscle tension is often reassuring to the patients and helpful in their understanding of treatment procedures.

From the standpoint of prognosis, one cannot promise a patient with a cervical problem complete cure, although one can hope for considerable relief. From a compensation standpoint, there frequently remains some degree of permanent disability. However, many of these patients can be kept quite comfortable by intermittent professional physical therapy.

SUMMARY

Eight hundred cases of complaints of pain in the neck and shoulders, classified as "cervical syndrome" were broken down into various entities and analyzed according to age, sex, and results of treatment. Over half of all patients were between 30 and 50 years of age; 60% were women and 40% men. Acute fibrositis was found to be a separate and distinct category, with over 90% of patients showing good improvement and 7% moderate improvement, with an average treatment time of 7.7 treatments. Results for injury and noninjury groups were similar to each other, with approximately 40% and 42% of patients making good improvement and 47% and 39% moderate improvement respectively. The injury group had an average treatment time of from four to five weeks, while the noninjury group had an average treatment time of three to four weeks. Only a slight difference was found in the degree of improvement as a result of treatment of patients having complaints of varying duration before treatment was started. No significant difference was found in the degree of final improvement of patients needing treatment of varying durations, and no optimal treatment time could be determined.

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Lower Nephron Nephrosis.—Tubular degeneration of the kidney has been popularly called lower nephron nephrosis. Often it has been spoken of as renal shutdown or acute renal failure. The clinical manifestation of tubular degeneration is signalized by oliguria or anuria and it is thought to be associated with an electrolyte imbalance. Hardaway refers to three phases of lower nephron nephrosis in illustrating a case. These phases are oliguria, diuresis and final recovery. He mentions that during the phase of oliguria the tubular cells are so damaged that all of the glomerular filtrate leaks into the interstitial spaces where it is reabsorbed; therefore, there is no infiltrate remaining to be excreted from the kidney. This period of oliguria lasts about seven days. The tubular cells then begin to recover and although they are water-tight, allowing the glomerular filtrate to pass out of the kidney, they have little absorptive power and little excretion function and consequently electrolytes are lost during the phase of diuresis. This is associated with a fixed specific gravity of the urine corresponding to the specific gravity of the glomerular filtrate. The third phase is that of recovery in which the kidneys resume their normal function.—C. O. Rice, M.D., and J. H. Strickler, M.D., Lower Nephron Nephrosis: II. The Function of the Kidney When Tubular Degeneration Exists, *The American Journal of Surgery*, October, 1955.

FURTHER EVALUATION OF HEATING BY MICROWAVES AND BY INFRARED AS USED CLINICALLY

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Although a number of basic studies of the heating effects of infrared energy and diathermy have been made, there still remains considerable confusion regarding the comparative effectiveness of various sources of heat on human tissue. Infrared energy for radiant heating has been used for many years. The infrared generators are safe, simple to use, and inexpensive and are known to provide effective heating of at least the more superficial tissues. During the last 25 years physicians have followed with interest the development of various types of generators of high-frequency electromagnetic energy (diathermy equipment) for heating tissues at relatively greater depths than can be effectively heated with infrared. Diathermy machines have been expensive, more difficult to use, and, if improperly used, fraught with some danger of burns and discomfort. Since it has been shown that the temperature in muscular tissue can be raised significantly with a 20 minute application of infrared energy [1] as well as with diathermy, one might be inclined to conclude that infrared energy may be as effective as some types of diathermy. Likewise, on the basis of certain theoretical considerations and some experimental data, it has been stated [2] that microwave apparatus operating at 2,450 megacycles will not provide a significantly greater increase of temperature in deep tissue than will infrared.

In order to clarify certain points regarding the effectiveness of infrared and of microwave diathermy as used clinically we have made a comparative study of the heating of deep human muscle tissue by these two types of energy. The measurements of heating were made in the quadriceps femoris muscle of normal individuals according to procedures used in evaluating diathermy equipment for the Council on Physical Medicine and Rehabilitation of the American Medical Association. Certain standards were established by this Council for heating of deep tissue by a diathermy machine in order for it to be rated as acceptable.[3] The Council required that such a machine must be able to develop a temperature of 40 C (104 F) at the end of 20 minutes in the deep tissues of the quadriceps muscle on the anterior part of the human thigh. In 1947, the first commercial microwave-diathermy machine was tested under the auspices of the Council and it satisfactorily met these requirements. In 1954, two commercial models of microwave-diathermy generators were made available to us for further study. The heating effects of these two commercial generators have been compared with three standard sources of infrared radiation.

RESULTS OF STUDIES WITH MICROWAVE GENERATORS

The heating effects of two microwave-diathermy generators using three standard directors, namely A, B, and C, were studied. The frequency of these generators was 2,450 megacycles with a wave length of 12.2 cm. in air. This is one of the microwave frequencies allocated by the Federal Communications Commission for medical equipment. Twelve normal persons were used as subjects. Temperatures were measured by means of a thermocouple in a 20 gauge needle. This was inserted into the quadriceps muscle to a depth of 5 cm. (about 2 in.) from the skin surface, and temperatures were recorded before and immediately after a heating period of 20 minutes. The observations of temperature were made as nearly as possible under the region where the radiation of energy by the microwave directors was maximal. The output of the machines was varied according to the maximal comfortable tolerance of the patient, which is the usual criterion for clinical dosage. Energies from 50 to 100% of the maximal output of the machines were used. Directors were placed at a standard distance of 5 cm. from the skin. Six observations were made with each director of each machine, resulting in a total of 36 tests. The results of the changes in temperature are recorded in tables 1 and 2.

Consistent readings of 40 C (104 F) or higher were obtained in the quadriceps muscle at a depth of 5 cm. Previous studies on the heating effects of microwave diathermy in human muscle reported by Gersten and associates [4] utilized temperature measurements made at depths of 1.5 cm. in the volar aspect of the forearm of normal persons. These observations were made in muscle with relatively little overlying subcutaneous fat. Since it is considered that the amount of subcutaneous fatty tissue may greatly modify or limit the heating of the deeper muscles, it was interesting to note that consistent temperature increases ranging from three to five degrees (centigrade) could be obtained in muscles beneath layers of subcutaneous fatty tissue of varying thicknesses. Estimates of the thickness of skin and subcutaneous tissue were made in a number of subjects by means of soft-tissue roentgenograms in which the distance from the skin to the anterior surface of the quadriceps muscle could be determined approximately. The thickness of skin and subcutaneous tissue over the quadriceps muscle varied from 4 to 25 mm.

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Read before the Section on Physical Medicine and Rehabilitation at the 104th Annual Meeting of the American Medical Association, Atlantic City, June 8, 1955.

The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

1. Gersten, J. W.; Wakim, K. G.; Stow, R. W., and Krusen, F. H.: A Comparative Study of the Heating of Tissues by Near and Far Infrared Radiation, Arch. Phys. Med. **30**: 691-699 (Nov.) 1949.

2. Schwan, H. P., and Piersol, G. M.: The Absorption of Electromagnetic Energy in Body Tissues: A Review and Critical Analysis, Am. J. Phys. Med. **33**: 371-404 (Dec.) 1954.

3. Minimum Requirements for Acceptance of Diathermy Apparatus, report of Council on Physical Medicine, J. A. M. A. **135**: 32-33 (Sept. 6) 1947.

4. Gersten, J. W.; Wakim, K. G.; Herrick, J. F., and Krusen, F. H.: The Effect of Microwave Diathermy on the Peripheral Circulation and on Tissue Temperature in Man, Arch. Phys. Med. **30**: 7-25 (Jan.) 1949.

In the subjects in whom the maximal comfortable tolerance required that the output of the machine be maintained at 50% of maximum, rises of temperature were obtained that were comparable to the rises noted in subjects for whom the output was maintained at 80 to 100% of maximum. Gersten and his associates [4] studied the temperatures at the end of five-minute periods of heating with microwave diathermy and showed

TABLE 1.—*Changes in Temperature (Degrees Centigrade) with Microwave Diathermy at a Depth of Five Centimeters in the Quadriceps Femoris Muscle After Twenty-Minute Exposure with Director A*

Test No.	Machine 1			Machine 2		
	Before Heating	After Heating	Rise	Before Heating	After Heating	Rise
1	37.0	40.5	3.5	37.0	42.0	5.0
2	36.3	40.3	4.0	37.2	40.4	3.2
3	35.8	40.5	4.7	36.6	41.7	5.1
4	35.6	40.5	4.9	36.8	41.1	4.3
5	36.1	41.0	4.9	36.0	41.2	5.2
6	36.3	40.4	4.1	36.4	41.1	4.7
Average, degrees C	36.2	40.5	4.3	36.7	41.3	4.6
Average, degrees F	97.2	104.9	7.7	98.0	106.3	8.3

that a substantial rise in temperature occurred by the end of the first five minutes of heating. This early rise in temperature of the deep tissues indicates a primary type of heating with penetration of microwaves into the muscle. He noted that the temperature then increased slightly for 10 to 15 minutes to a maximum, which occurred usually between 15 and 20 minutes after the heating was started, and then decreased if the heating was continued to 30 minutes or longer.

RESULTS OF STUDIES WITH INFRARED GENERATORS

In a study of the heating effects of three commonly used sources of infrared energy for comparison with the effects of microwave diathermy, observations were made of the temperature in the quadriceps muscle at a depth of 5 cm. from the skin surface before and after 20-minute applications of infrared radiation. The three sources of infrared energy used were (1) a 250 watt reflector heat bulb applied at distances of 35 to 40 cm. (about 14 to 16 in.), (2) a 300 watt, ordinary frosted tungsten-filament bulb with a reflector applied at a distance of about 35 cm. (14 in.), and (3) a 450 watt

TABLE 2.—*Summary of Changes in Temperature (Degrees Centigrade) with Microwave Diathermy at a Depth of Five Centimeters in the Quadriceps Femoris Muscle with Twenty-Minute Exposure*

Director	Machine 1				Machine 2			
	No. of Tests	Before Heating	After Heating	Rise	No. of Tests	Before Heating	After Heating	Rise
A	6	36.2	40.5*	4.3†	6	36.7	41.3	4.6
B	6	36.6	40.6	4.0	6	37.3	40.6	3.3
C	6	36.5	40.9	4.4	6	37.0	41.2	4.2

* 40 C = 104 F.
† Rise of 4.3 degrees (centigrade) = rise of 7.7 degrees (Fahrenheit).

carborundum-rod unit applied at a distance of 90 cm. (about 36 in.). The first two units are considered to be sources of near or short infrared energy and the carborundum-rod unit a source of far or long infrared radiation. The distance from the skin to the source of infrared radiation was based on the maximal comfortable tolerance of the patient. Temperatures of the deep tissue of the thigh indicated rises of a maximum of one degree (centigrade) in a series of normal subjects tested with the three sources of infrared (table 3). These studies were conducted in a room in which the temperature and humidity were controlled (80 F and 40% humidity).

It is well known that the major amount of the infrared energy is absorbed in the first few millimeters of skin and subcutaneous tissue and that heating of deeper subcutaneous tissue and muscular tissue occurs secondarily. Gersten has shown that this type of secondary heating produces an almost linear increase in temperatures in the subcutaneous and muscular tissues over a period of 15 minutes when the infrared energy was applied over the volar aspect of the human forearm. Although in our study slight rises of temperature occurred in the muscular layers following the use of infrared radiation, certainly the degree of heating at depth is extremely limited and one can predict with some certainty that the rise of temperature at a depth of 5 cm. will be almost negligible. Our data showed that the highest rise in temperature observed in the deep thigh muscles was one degree (centigrade). These observations are in agreement with those of Sweeney and associates,[5] who found rises of less than one degree (centigrade) in muscular tissue of the thigh and buttock at a depth of 4.5 cm. and noted no signifi-

TABLE 3.—*Rise in Temperature (Degrees Centigrade) with Infrared Radiation at a Depth of Five Centimeters After Twenty-Minute Exposure*

Case No.	250 Watt Reflector Bulb	300 Watt Tungsten Bulb	450 Watt Carborundum Unit
1	1.0	0.7	0.2
2	0.4	0.5	0.2
3	0.7	0.4	0
4	0.4	0.8	0
5	0	0.1	0.1
6	0.4	0.4	0.6
7	0.5	0.5	0.3

cant differences in heating between the carborundum-rod units and the luminous sources of infrared energy. Likewise, Murphy and associates [6] showed no significant deeper heating with infrared radiation in experimental animals. These observations with infrared radiation are in marked contrast to our observations with microwave diathermy.

CONCLUSIONS

Microwave diathermy at 2,450 megacycles consistently raised the temperature deep in the quadriceps muscle to levels of more than 40 C (104 F) when applied for 20 minutes with the usual clinical techniques and dosages. Infrared radiation derived from three standard sources did not produce consistently significant elevations of temperature in the quadriceps muscle at a depth of 5 cm. from the skin surface. It is possible that other frequencies of microwave energy may be more effective than the presently used 2,450 megacycles in heating the muscles at deeper levels. However, at the present time, this frequency is certainly providing a suitable source of heat for producing significant increases in temperature in the deep muscular tissues of human subjects.

5. Sweeney, F. X.; Horvath, S. M.; Mellette, H. C., and Hutt, B. K.: Infrared Heating of Tissues, Arch. Phys. Med. **31**: 493-501 (Aug.) 1950.
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CLINICAL NOTES

ESCHERICHIA COLI MENINGITIS IN FIVE-DAY-OLD INFANT

REPORT OF A CASE WITH COMPLETE RECOVERY

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and
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Meningitis is uncommon during the first weeks of life. The mortality incidence of meningitis has changed for the better as a consequence of the introduction and availability of newer and more effective antibiotics, such as chlortetracycline (Aureomycin), oxytetracycline (Terramycin), and chloramphenicol (Chloromycetin). By way of example, before the advent of these antibiotics, of 74 infants less than 2 weeks of age with primary bacterial meningitis, only 7 survived.[1] The morbidity incidence, in the form of impaired cerebral function as a result of meningitis, persists.[2] The high morbidity is partly attributable to poor resistance of the infant to infection and partly to delayed diagnosis.[2]

DIAGNOSIS

It is well known that, in some cases, the diagnosis of meningitis in the young infant may be extremely difficult, mainly because of the absence of the characteristic signs: the bulging anterior fontanel; nuchal rigidity; projectile vomiting; and positive Brudzinski's and Kernig's signs.[3] Cyanosis, fever, vomiting, or, perhaps, icterus, which in themselves are not symptomatic of meningitis, may nevertheless be present and misleading. An unexplained sepsis makes a cerebrospinal fluid study imperative, for that alone may disclose meningitis. The physician should be alert to the least suggestion of meningitis in obscure conditions, for earliest possible recognition of meningitis and isolation of the causative organism are essential to recovery. In some cases, direct smears can be made and the organism identified; otherwise cultures are required to reveal the causative organism. Escherichia coli meningitis is the most frequent form found in the infant.[3]

REPORT OF A CASE

A full-term infant, weighing 10 lb. 8 oz. (4,762.7 gm.) was born on April 7, 1953, with the aid of outlet forceps. On physical examination a few hours later, the infant was apparently normal. The mother had been in good health throughout pregnancy. The day after birth, however, a right cephalhematoma over the parietal area was observed. The temperature peak that day was 101 F (38.3 C) but dropped to normal at the end of the day. The infant had begun to feed and was taking the offerings well. On the fifth day the temperature was elevated to 103.2 F (39.6 C). The infant did not appear acutely ill but had a fulness of the anterior fontanel and a bilateral internal squint. The cephalhematoma was still present. Because of the physical findings, a tentative diagnosis of meningitis was made. A spinal tap revealed 1,450 cells per cubic millimeter; 90% lymphocytes; Pandy's test for globulin, +3; protein, 105 mg. per 100 cc.; sugar, 26 mg. per 100 cc.; and chlorides, 732 mg. per 100 cc. A direct smear of the centrifuged cerebrospinal fluid specimen revealed an occasional gram-negative bacillus. Culture of the spinal fluid and bacterial sensitivity reactions to the various antibiotics were ordered, but through an error no blood cultures were done. Procaine penicillin was given intramuscularly, 150,000 units twice daily; and chlortetracycline, 25 mg. per kilogram of body weight every 24 hours, was given orally. Medication was arbitrarily chosen. Within the next 24-hour period, the general condition of the infant was improved. The anterior fontanel was less tense; the temperature began to drop until it was normal within 48 hours after the onset of therapy.

Three days after the spinal tap had been done, the laboratory reported a positive Esch. coli growth. The sensitivity tests showed maximal reaction for chloramphenicol and streptomycin and only moderate reaction for oxytetracycline and chlortetracycline. With the offending organism identified, therapy was modified. Penicillin therapy was discontinued, and the dosage of chlortetracycline raised to approximately 35 mg. per kilogram of body weight every 24 hours. The infant tolerated this dosage well. A spinal tap done six days after the original one revealed 263 cells per cubic millimeter. The cultures were negative for growth. The infant was discharged from the hospital at 20 days of age, 15 days after the onset of illness. Medication continued at home consisted of chlortetracycline, given in doses of 25 mg. per kilogram of body weight every 24 hours. There still remained an internal squint in one eye, and the size of the cephalhematoma remained unchanged. Repeated blood cell counts as well as urinalyses were within normal range. Roentgenographic examination revealed no evidence of abnormalities in the osseous components. An 8 by 5 cm. diameter soft tissue density was present in the right parietal area representing a rather large cephalhematoma.

The infant was seen at home at three-day intervals. Two weeks after discharge from the hospital, he was returned for a spinal tap, which revealed 48 cells per cubic millimeter. The eye squint had disappeared. Two weeks subsequently another spinal tap revealed 16 cells per cubic millimeter. It was thought safe to discontinue medication at this point. The patient had been treated for six weeks. The size of the cephalhematoma, however, had still not changed. At the age of 2 months, when the child was seen at the office, the cephalhematoma was breaking down at its medial aspect as evidenced by a fluctuant erythematous area, 2 cm. in diameter. The child did not appear ill; temperature was not elevated. The impression at that time was of a secondary infection of the cephalhematoma. After treatment with hot wet dressings and with penicillin injected intramuscularly for six days without significant improvement, the cephalhematoma was incised. A thin watery material obtained from the area suggested an Esch. coli infection, which was confirmed by culture study. At this time the sensitivity report read: "sensitive to Chloromycetin, streptomycin and terramycin; moderately sensitive to Aureomycin."

Oxytetracycline therapy, 25 mg. per kilogram of body weight every 24 hours, was instituted and continued for a month. After that period, the head returned to normal size and has remained so during one and one-half years of close observation. The infant appears normal in every respect.

TREATMENT

Occasionally among the wide-spectrum antibiotics, one drug is more specific against an organism than another. It is important that the drug chosen have the widest spectrum of bacterial activity; otherwise decisive time may be lost because of a less active drug. In the case presented, the organism had not been identified; therefore, penicillin and chlortetracycline were chosen in combination. The antagonism of drugs was considered. Inasmuch as it was not known which would be the more efficacious, both drugs were used. Therapy

From the Children's Department, Illinois Masonic Hospital.

1. Hoyne, A. L., and Brown, R. H.: Staphylococcic Meningitis: Its Rarity in the Newborn, Arch. Pediat. **65**: 175-182 (April) 1948.

2. Epstein, J. A., and Goldzier, S. E., II: Bilateral Encapsulated Subdural Effusion Complicating Bacterial Meningitis in Infancy: Report of Case with Review of Literature, A. M. A. Arch. Neurol. & Psychiat. **69**: 242-249 (Feb.) 1953.

3. Kagan, B. M.; Hess, J. H.; Mirman, B., and Lundeen, E.: Meningitis in Premature Infants, Pediatrics **4**: 479-483 (Oct.) 1949.

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was readjusted when the identity of the organism became known. Laboratory tests indicated only moderate sensitivity of the organism to chlortetracycline; nevertheless, clinically it appeared that the child was reacting well to the medication, as indicated by lowered temperature and decreasing prominence of the fontanel. For this reason, it was decided to make no changes.

COMMENT

What relationship existed between the meningitis and the cephalhematoma is not clear. The cephalhematoma might have become secondarily infected, although no signs of fracture were seen in the roentgenogram.[4] Kendall and Woloshin [4] have reported that in cephalhematomas there is a 25% incidence of skull fracture in the same area. A similar case has been reported of a cephalhematoma that was sterile on aspiration.[5]

SUMMARY AND CONCLUSIONS

A 5-day-old infant who developed an Escherichia coli meningitis was followed for one and one-half years. Mental and physical development has been normal. Delay in diagnosis of the primary condition is generally the cause of poor results. It is emphatically important to identify the causative organism. Culture studies are therefore necessary. Clinical judgment in therapy, however, takes precedence over laboratory reports.

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4. Kendall, N., and Woloshin, H.: Cephalhematoma Associated with Fracture of the Skull, J. Pediat. **41**: 125-132 (Aug.) 1952.
5. Cohen, S. M.; Miller, B. W., and Orris, H. W.: Meningitis Complicating Cephalhematoma, J. Pediat. **30**: 327-329 (March) 1947.

ABSCESS OF THE EPIGLOTTIS

PROBLEM IN DIFFERENTIAL DIAGNOSIS

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Jerome Raim, M.D.
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The following report concerns the case of a patient with acute epiglottic abscess of Pseudomonas origin. This case report serves to illustrate the difficulty of differentiating epiglottic abscess from an attack of bronchial asthma. Primary abscess of the epiglottis is a rare entity. Epiglottic abscess formation is more frequent in adults than children. In a 10 year period at the Graduate Hospital of the University of Pennsylvania only four cases of epiglottic abscess in adults were observed. They most commonly occurred as a complication of acute pharyngitis associated with abscess of the lingual tonsil.[1] The pathogenic micro-organisms vary. Streptococci are isolated most frequently. In a report of 13 cases of epiglottic suppuration in which cultures were taken, Streptococcus hemolyticus was found in pure culture in 6 cases. Other organisms reported were Hemophilus influenzae, Escherichia coli, Pseudomonas aeruginosa, Micrococcus catarrhalis, Micrococcus (Staphylococcus) aureus, and pneumococci.[2]

From the Department of Surgery, Jackson Memorial Hospital, and the University of Miami School of Medicine.

1. Noone, E. L., and Shields, W. P.: Abscess of Epiglottis in Infant: Case Report, J. Pediat. **11**: 556-558 (Oct.) 1937.
2. Weiss, J. A.: Primary Abscess of Epiglottis, J. A. M. A. **98**: 552-553 (Feb. 13) 1932.

REPORT OF A CASE

A 42-year-old man came into the emergency ward of Jackson Memorial Hospital complaining of shortness of breath of two hours' duration. Nine hours prior to admission, the patient ate a hamburger and shortly thereafter became nauseated. In an attempt to induce vomiting, he put his finger down his throat and vomited and immediately had the feeling that "something was stuck in his throat." Shortly afterwards, he experienced pain and dysphagia. Past history of significance revealed asthma since childhood and recurrent attacks of acute tonsillitis. Physical examination revealed a well-developed, extremely muscular white man with a thick, bull neck. When first seen, approximately eight hours after vomiting, he was extremely apprehensive, but no dyspnea was noted. The temperature was 101 F (38.3 C) rectally, respirations 34, and pulse rate 140 per minute. His mucous membranes were observed to be pink, although his face was cyanotic. The nares were clear. The anterior tonsillar pillars and posterior pharynx were deeply erythematous. The palatine tonsils were both enlarged, met in the midline, and were intensely edematous and infected. Inspiratory and expiratory rales were heard throughout both lung fields. No suprasternal, intercostal, or sternal retraction was noted.

The patient was given 200 mg. of phenobarbital (Luminal) intramuscularly, 50 mg. of diphenhydramine (Benadryl) hydrochloride, and 0.5 gm. of aminophylline intravenously. He became steadily worse. Dyspnea was now apparent, and the patient became more apprehensive. He suddenly developed a crowing inspiratory stridor, extreme hoarseness, and marked cyanosis, and then he lost consciousness. A blood pressure reading could not be obtained. A tracheotomy was done immediately. When an airway was established, the patient regained consciousness; however, dyspnea persisted for some period of time. A posterior pharyngeal culture was obtained at this time. With the tracheotomy tube in place, a gloved finger was used to palpate the pharynx. Palpation revealed marked swelling and edema of both tonsils. The right posterior pharyngeal area was indurated. An indirect laryngeal examination could not be done at this time because of marked edema. The day following admission another throat culture was taken. The patient could not swallow, and he was maintained on intravenously administered fluids. Treatment with combined penicillin and dihydrostreptomycin (Combiotic) was started. The first culture obtained grew a pure culture of Pseudomonas. Sensitivity studies were not returned for several days, and because of the dysphagia, nitrofurantoin (Furadantin), 100 mg. dissolved in a glass of water was used as a gargle by the patient three times a day.

The second culture grew Pseudomonas, alpha Streptococcus, and Micrococcus catarrhalis. Pseudomonas sensitivity studies when obtained revealed: chloramphenicol (Chloromycetin), streptomycin, dihydrostreptomycin, and polymyxin, slightly sensitive; chlortetracycline (Aureomycin), oxytetracycline (Terramycin), bacitracin, and penicillin, resistant; nitrofurantoin studies were not obtained. The second day after admission an indirect laryngoscopy examination was performed. The vocal cords appeared normal, but the epiglottis was large, red, and edematous. In the center of the epiglottis, an elevated yellow area was seen. This appeared to be open and draining. Daily indirect mirror examinations of the epiglottis revealed the edema, erythema, and the size of the abscess to be steadily decreasing as was the tonsillar swelling and dysphagia. Seven days after admission the patient's temperature returned to normal and mirror examination revealed that all epiglottic edema and exudate had disappeared. The tracheotomy tube was withdrawn after a well-tolerated trial period of complete blockage.

COMMENT

This case report illustrates an actual problem in differential diagnoses between an acute bronchial asthmatic attack and an acute upper repiratory obstruction. In this case a history of bronchial asthma was present, along with that of frequent attacks of acute tonsillitis. Asthmatic

rales as well as tonsillar and pharyngeal injection were present. Dyspnea was evident, but no retraction could be seen. A diagnosis of an acute asthmatic attack was made, but the more urgent pathology of epiglottic abscess, edema, and upper respiratory obstruction was not noted until later. The causative organism is interesting in its rarity.

SUMMARY

A case of Pseudomonas abscess of the epiglottis was proved by smear and culture. The problem exists of diagnosis between an acute asthmatic attack and upper respiratory obstruction.

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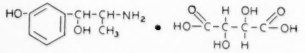
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

Monographs and supplemental statements on drugs that appear in this column have been authorized by the Council for publication and inclusion in New and Nonofficial Remedies. They are based upon the evaluation of available scientific data and reports of investigations.

H. D. KAUTZ, M.D., *Secretary.*

Metaraminol Bitartrate. — $C_9H_{13}NO_2 \cdot C_4H_6O_6$. — M.W. 317.29.—*l*-α-(1-Aminoethyl)-*m*-hydroxybenzyl alcohol hydrogen *d*-tartrate.—*l*-1-(*m*-Hydroxyphenyl)-2-amino-1-propanol hydrogen *d*-tartrate.—The structural formula of metaraminol bitartrate may be represented as follows:

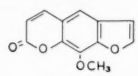


Actions and Uses.—Metaraminol bitartrate, a sympathomimetic amine compound, has vasoconstrictor properties similar to those of ephedrine, but it is more potent and it exhibits less of the central stimulant effects of that drug. It also exhibits both the action of the aromatic hydroxy-substituted compounds and the prolonged effect of the isopropylamines. Metaraminol bitartrate is used topically as a nasal decongestant in the symptomatic relief of nasal edema accompanying the common cold, rhinitis, sinusitis, and nasopharyngitis. It provides relatively prolonged shrinkage of the nasal mucous membranes with virtually no stinging, irritation, or secondary engorgement. Depression of ciliary activity is minimal. Clinical use has revealed no evidence of undue central stimulation. Undesirable side-effects such as tremor, palpitation, tachycardia, and insomnia seldom occur when the drug is administered as indicated; however, because of its vasoconstricting action, care must be taken not to exceed the stated dosage.

Dosage.—Metaraminol bitartrate is administered topically as an isotonic solution containing 0.25% of the base, buffered to a pH of 6, which is within the range of normal nasal secretion. It may be applied with a dropper or an atomizer. The solution should be at room temperature or slightly above for application. The usual dose is 2 or 3 drops or one or two sprays in each nostril, which may be given every 3 hours but not more than four times daily. Treatment may be continued for a period not to exceed one week. The 0.25% solution also may be applied to tampons for intranasal application.

Sharp & Dohme, Division of Merck & Co., Inc., cooperated by furnishing scientific data to aid in the evaluation of metaraminol bitartrate.

Methoxsalen.—$C_{12}H_8O_4$.—M.W. 216.20.—δ-lactone of 3-(6-hydroxy-7-methoxybenzofuranyl)acrylic acid.—8-Methoxypsoralen.—Xanthotoxin.—The structural formula of methoxsalen may be represented as follows:



Actions and Uses.—Methoxsalen, a methoxypsoralen derivative, increases the production of melanin pigment in the skin when exposed to ultraviolet light. Oral administration of the drug decreases, whereas topical use increases, the erythemic response of the skin to ultraviolet rays, possibly because local application produces a higher skin concentration. Methoxsalen is useful for the treatment of idiopathic vitiligo when used in conjunction with exposure of affected areas of the skin to ultraviolet light. Sunlight having an effective ultraviolet component is preferable as a source of such radiation, but a suitable artificial source can be employed effectively. Methoxsalen therapy is not of value in patients who cannot be exposed to ultraviolet light. Methoxsalen has no effect on leukoderma associated with the destruction of melanocytes, which occurs following severe burns and trauma; also it is not known to influence leukoderma consequent to infections such as pinta or leprosy.

Methoxsalen is extremely potent and should be employed only under medical supervision to avoid overdosage and potential toxic effects. Serious burning of the skin can result from incorrect topical use. Whenever blistering occurs, topical application and exposure to sun or ultraviolet lamp should be discontinued. Oral medication may be maintained unless edema occurs at time of blistering. Oral use then should be discontinued until edema is corrected. If acute dermatitis develops, it should be treated before resuming topical therapy. Oral therapy may be unwise in patients with only a few isolated areas of depigmentation, because of the increased danger of systemic toxic effects. Oral administration occasionally is associated with unpleasant side-effects such as gastric irritation, nausea, nervousness, insomnia, and depression. If these occur, oral dosage should be reduced. Since the drug is potentially hepatotoxic, it is contraindicated in the presence of hepatic insufficiency or diabetes mellitus. Liver function tests should be performed monthly on all patients for the first three months and at less frequent intervals throughout the course of therapy. Physicians should weigh the relative importance of possible psychological benefits against potential harmful effects in the employment of methoxsalen therapy for a benign cosmetic disease such as vitiligo.

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Dosage.—Methoxsalen is administered orally and/or topically and only in conjunction with appropriate exposure of the affected skin to ultraviolet rays. Since topical application can be applied to only a few lesions at a time, oral therapy is more suitable for patients with extensive areas of depigmentation. Oral therapy also may be employed in conjunction with topical application, provided the locally treated areas, which thus are rendered more susceptible to ultraviolet rays, are protected from overexposure. Examination of the skin under Wood's light before and during treatment will aid in estimating varying degrees of depigmentation and repigmentation as a guide to therapy.

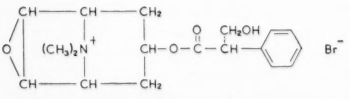
The suggested oral dosage for adults is 20 mg. once daily, administered approximately 2 hours prior to ultraviolet exposure. For children 1 to 6 years of age, an oral dosage of 10 mg. once daily, similarly timed, is suggested; for those 6 to 12 years of age, a dosage of 10 to 20 mg. once daily is suggested. Oral medication may be followed by a drink of milk and/or the use of a sedative to minimize side-effects. When oral therapy is employed alone, the vitiliginous skin is exposed to sunlight or a suitable artificial source of ultraviolet light for 5 minutes daily. This should be increased slowly until the affected areas are being exposed for at least 30 minutes after each oral dose.

Topical therapy is applied in the form of a 1% lotion. It should be applied only once weekly and to only a few of the depigmented areas, followed by exposure of the treated areas to ultraviolet light for a period not to exceed one minute. When an artificial source of ultraviolet light is employed, the initial exposure should be made with one-half the minimal erythemic dose. It is desirable to alternate the sites of weekly topical applications in order to prevent severe erythema and to promote uniform repigmentation.

When oral medication is to be employed concomitantly with topical therapy, it is absolutely essential to protect the topically treated areas from daily exposure to ultraviolet light, or severe burning will result. In conjunction with the stated oral dosage and topical concentration, the locally untreated and topically treated areas should be exposed to ultraviolet rays only as indicated previously. Although repigmentation may begin to show in some patients within a few weeks, other patients may require therapy for as long as 6 months before improvement is observed.

Paul B. Elder Company cooperated by furnishing scientific data to aid in the evaluation of methoxsalen.

Methscopolamine Bromide.—$C_{18}H_{24}BrNO_4$.—M.W. 398.30.—Epoxytropine tropate methylbromide.—The structural formula of methscopolamine bromide may be represented as follows:



Actions and Uses.—Methscopolamine bromide, a parasympatholytic agent, produces the antisecretory and antispasmodic actions characteristic of anticholinergic drugs. It has greater selectivity than atropine in blocking vagal nerve impulses concerned with gastric secretion, and it is capable of suppressing both the volume and the acidity of gastric secretion. Methscopolamine bromide also delays gastric emptying and reduces peristaltic activity of the intestinal tract. The drug also inhibits salivary secretion and sweating.

Methscopolamine bromide is useful as an adjunct in the management of peptic ulcer, certain forms of gastritis associated with hyperacidity and hypermotility, hypermotile dysfunction of the intestinal tract such as functional diarrhea (irritable bowel, mucous colitis, spastic colon) and diarrhea associated with extensive bowel resections and ileostomies, hyperhydrosis or sweating that aggravates certain dermatoses, and excessive salivation. Its effectiveness in biliary dyskinesia or for ureteral and vesical spasm has not been established.

In doses exceeding those usually required to produce its peripheral atropine-like effects, methscopolamine may induce a ganglionic blocking action similar to that of tetraethylammonium chloride. Its ganglionic blockade potency is about 60% that of tetraethylammonium, and doses of methscopolamine sufficient to induce such action may produce serious side-effects. With still higher doses, the drug produces a toxic curare-like blocking action at the myoneural junction.

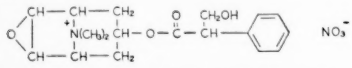
The most commonly reported side-effects are dryness of the mouth, constipation, and blurring of vision caused by the cycloplegic and mydriatic actions of the drug. Because of the latter, the drug is contraindicated in patients with glaucoma. Less commonly observed side-effects are difficult urination, dysphagia, heartburn, dizziness, palpitation, flushing or excessive dryness of the skin, drowsiness, headache, and nausea. The occurrence or degree of some of these side-effects frequently diminishes with continued administration of the drug or after temporary withdrawal and reduction in dosage. Chewing gum may mitigate mouth dryness. Patients who experience blurred vision should be warned against operating vehicles or other machinery. Constipation, caused by reduction in intestinal motility, also may be troublesome. Because of the action of the drug in delaying gastric emptying, it should be used cautiously, if at all, in pyloric obstruction. Caution likewise is necessary in prostatic hypertrophy, in patients with a history of urinary retention caused by other anticholinergic drugs, and in patients generally intolerant to anticholinergic therapy or in whom the desired actions are not obtained before the dosage approaches toxic levels.

Dosage.—Methscopolamine bromide is administered orally. The usual daily oral dosage for adults is 2.5 to 5 mg. administered one-half hour before meals and at bedtime. The bedtime dose may be as high as 10 mg. Dosage must be individualized, and, unless the symptoms associated with the condition under treatment are unusually severe, it is advisable to begin therapy with the minimum doses. This is essential in patients with a history of intolerance to anticholinergic drugs. In peptic ulcer, control of symptoms with small doses usually can be achieved in conjunction with appropriate use of antacids and management of the diet. When symptoms are severe, the higher dose level may be administered initially, but it should be reduced if unpleasant side-effects develop. When the minimum doses are ineffective ini-

tially, they may be increased gradually to tolerance until the desired response occurs. If severe side-effects appear, therapy should be temporarily discontinued and then resumed at a lower dose level. When side-effects overshadow the desired action, the drug should be completely withdrawn.

The Upjohn Company cooperated by furnishing scientific data to aid in the evaluation of methscopolamine bromide.

Methscopolamine Nitrate. — $C_{18}H_{24}N_2O_7$. — M.W. 380.41. — Epoxytropine tropate methylnitrate. — The structural formula of methscopolamine nitrate may be represented as follows:



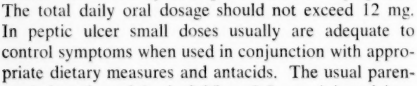
Actions and Uses.—Methscopolamine nitrate is a parasympatholytic agent that has the same actions, uses, and contraindications as methscopolamine bromide. See the monograph on methscopolamine bromide.

Dosage.—Methscopolamine nitrate is administered orally or parenterally by either subcutaneous or intramuscular injection. Injection of the drug should be reserved for patients requiring unusually prompt action or in whom oral medication is not feasible. The dosage of methscopolamine nitrate is approximately equal to that for methscopolamine bromide since, on the basis of their molecular weights, the same amount of the nitrate salt contains only slightly more of the base.

The usual oral dosage for adults is 2 to 4 mg., administered one-half hour before each meal and upon retiring. The duration of action of a single dose is about 6 hours after absorption into the blood. A 2 mg. dose in enteric coated form to delay action of the drug can be given at bedtime to provide a more prolonged effect. Larger daily or bedtime doses may be required for severe symptoms. The total daily oral dosage should not exceed 12 mg. In peptic ulcer small doses usually are adequate to control symptoms when used in conjunction with appropriate dietary measures and antacids. The usual parenteral dose for adults is 0.25 to 0.5 mg. injected in a suitable solution, either subcutaneously or intramuscularly, three or four times daily until oral medication can be instituted.

R. J. Strasenburgh Company cooperated by furnishing scientific data to aid in the evaluation of methscopolamine nitrate.

Pentolinium Tartrate.—$C_{23}H_{42}N_2O_{12}$.—M.W. 538.61. — Pentamethylene-1,1′-bis-(1-methylpyrrolidinium bitartrate).—The structural formula of pentolinium tartrate may be represented as follows:



Actions and Uses.—Pentolinium tartrate, a quaternary ammonium compound, is a potent ganglionic blocking agent, qualitatively similar in action to tetraethylammonium and hexamethonium compounds. It inhibits the transmission of nerve impulses mediated through both sympathetic and parasympathetic ganglions of the autonomic nervous system. Blocking of sympathetic ganglions, which mediate impulses causing vasospasm, particularly in the lower extremities, produces increased blood flow and hypotension. Similar interference with parasympathetic stimuli may produce loss of ocular accommodation, decrease or cessation of motility of the gastrointestinal tract, and alteration of bladder function. The dose of pentolinium required to produce ganglionic blockade is smaller than that of hexamethonium, and it has a longer duration of action, necessitating less frequent administration. When administered orally, pentolinium tartrate appears to exert less costive effect than does hexamethonium chloride. Tolerance to pentolinium develops with continued use, as with hexamethonium, but a significant degree of cross tolerance has not been observed.

Pentolinium tartrate is useful clinically in the selective management of severe, moderately severe, and malignant stages of hypertension. Ganglionic blockade usually is more effective for controlling severe episodic elevations of blood pressure than for mild labile hypertension. Like other ganglionic blocking agents, the drug may be expected to prove beneficial in the diagnosis and treatment of peripheral vasospastic disorders, but appropriate clinical studies will be required to determine its usefulness, route of administration, and dosage for that purpose.

Pentolinium tartrate is associated with the same side-effects as other ganglionic blocking agents. Parasympathetic blockade may produce blurring of vision and dryness of the mouth. Urinary retention or delayed emptying of the bladder may occur, especially in older patients with prostatic enlargement. The hypotensive effect of sympathetic blockade usually predisposes patients to some degree of postural hypertension and syncope. Overdosage may induce peripheral circulatory collapse. Its use is dangerous in patients who have lost blood recently because the drug blocks normal compensatory vasoconstrictor mechanisms. As the drug is more slowly and less completely absorbed orally than parenterally, larger oral doses are required to produce the same effect. Either injection or oral administration may be associated with constipation or diarrhea, depending on the dominance of sympathetic or parasympathetic blockade, but constipation is more commonly encountered, especially when the drug is given orally. The oral costive effect aggravates erratic absorption and may lead to an exaggerated response to the drug unless strict attention is paid to maintaining regular bowel evacuation. The drug is contraindicated in organic pyloric stenosis, recent myocardial infarction, severe coronary insufficiency, and cerebral arteriosclerosis (encephalopathy). Renal disease is not an absolute contraindication, except when impairment of renal function can lead to systemic accumulation of the drug or when lowered blood pressure leads to further renal insufficiency, as in patients with a blood urea nitrogen above 80 mg. per 100 cc. that persists in the presence of lowered blood pressure.

Dosage.—Pentolinium tartrate is administered orally or by intramuscular or subcutaneous injection only. Slow dissociation of the bitartrate ion makes response to the drug unpredictable when given intravenously. Dosage is expressed in terms of the salt. Injection therapy preferably should be instituted in the hospital. In

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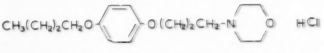
hypertension the dosage of the drug should be aimed at producing a gradual decrease in blood pressure and care must be taken in estimating dosage to distinguish between casual (office) versus basal (home) blood pressure determinations. The initial single parenteral dose should not exceed 3.5 mg., and, in patients known to be susceptible to the drug, 2.5 mg. If this dose does not produce the desired response, increments of 0.5 to 1 mg. then are administered at not less than 4 to 6 hour intervals to avoid cumulative effect. Maximum effect usually occurs 2 hours after each injection. When an effective dose is established, this can be supplemented with smaller doses at 6 to 8 hour intervals until a satisfactory daily regime is achieved for the individual patient. The total effective parenteral daily dosage usually ranges from 30 to 60 mg., divided as indicated previously. Patients should be requested to lie down if giddiness occurs and should not be permitted to rise suddenly after injection.

The initial oral dosage should be 20 mg. every 8 hours for 2 to 7 days in ambulatory patients and for 2 to 3 days in hospitalized patients. Increases in oral dosage of 20 mg. are then made at 2 to 7 day intervals until the minimum effective dosage is reached. The total oral daily dosage may vary from as low as 60 mg. to as high as 600 mg. in exceptionally refractory cases. Termination of hypotensive therapy by either route should not be abrupt unless severe side-effects supervene. Severe postural hypotension may be combated by the administration of vasopressor drugs, pending readjustment in dosage of pentolinium. Physostigmine or pilocarpine may be used to overcome blurring of vision or severe mouth dryness. The drug should be temporarily discontinued if constipation cannot be controlled.

Wyeth Laboratories, Inc., cooperated by furnishing scientific data to aid in the evaluation of pentolinium tartrate.

Pramoxine Hydrochloride. — $C_{17}H_{27}NO_3 \cdot HCl$. — M.W. 329.88. — 4-[3-(*p*-Butoxyphenoxy)propyl]morpholine hydrochloride.—The structural formula of pramoxine hydrochloride may be represented as follows:



Actions and Uses.—Pramoxine hydrochloride is a surface anesthetic agent chemically distinct from local anesthetic compounds of the benzoate ester type such as procaine. Its index of sensitization appears to be lower than that of procaine derivatives, and its distinct chemical structure is likely to minimize the danger of cross sensitivity reactions in patients allergic to other local anesthetics. Pramoxine hydrochloride produces satisfactory surface anesthesia and is reasonably well tolerated on the skin and less delicate mucous membranes. It should not be injected because of its tendency to irritate tissues; for the same reason it should not be used in the eye or nose.

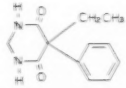
Pramoxine hydrochloride is useful topically for a variety of purposes: to relieve surface pain or itching involving external injuries such as minor burns and wounds, dermatoses, pruritic syndromes, surgical wounds such as episiotomy and hemorrhoidectomy, anal lesions and dilatations, and rectal examinations including sigmoidoscopy; to anesthetize laryngopharyngeal surfaces prior to instrumentation or to obtund laryngospasm during general anesthesia; and to facilitate endotracheal and intragastric intubation (exclusive of bronchoscopic and gastroscopic procedures). In chronic syndromes its prolonged use should be avoided, with efforts directed rather toward correction of the underlying cause.

Pramoxine hydrochloride has a low toxicity and its surface application has not been associated with serious untoward effects. Although its sensitizing potential is low, the possibility of allergic reactions should be borne in mind. Initial burning or stinging prior to the onset of anesthesia is occasionally encountered, but this should not contraindicate its application except in the eye and nose.

Dosage.—Pramoxine hydrochloride is administered topically. It is applied to the affected area in a concentration of 1% as a cream, jelly, or solution. The latter can be applied by means of a spray or gauze pads soaked in the solution. Applications usually are repeated every 3 to 4 hours. From 5 to 7 cc. of a 1% solution is required for spraying the laryngopharyngeal surface. The jelly and cream are used also for lubrication of devices for instrumentation and for digital dilatations or examinations.

Abbott Laboratories cooperated by furnishing scientific data to aid in the evaluation of pramoxine hydrochloride.

Primidone.—$C_{12}H_{14}N_2O_2$.—M.W. 218.25.—5-Ethyldihydro-5-phenyl-4,6(1H,5H)-pyrimidinedione.—5-Phenyl-5-ethylhexahydropyrimidine-4,6-dione.—The structural formula of primidone may be represented as follows:



Actions and Uses.—Primidone, a pyrimidine derivative, is related to phenobarbital but has different chemical and pharmacological properties. Animal experiments indicate that its anticonvulsant activity and toxic effects compare favorably with other similar acting drugs. By most experimental methods of comparison, the anticonvulsant potency and neurotoxicity of primidone are somewhat less than those of phenobarbital. Clinically, primidone is effective in the control of grand mal and psychomotor epilepsy, but further clinical studies are required to determine its usefulness in petit mal, minor motor, or focal types of seizures. As with all anticonvulsants, some patients who are refractory to other agents may respond to primidone and vice versa.

Primidone is readily absorbed after oral administration and uniformly distributed in the body tissues. Approximately 60 to 80% of the ingested dose is excreted in the urine within 24 hours. In therapeutic doses more than 90% of the total urinary excretion consists of approximately equal amounts of unchanged primidone and a metabolite, phenylethylmalondiamide. Although crystalluria attributed to this metabolite has been observed in experimental animals after large doses, subsequent urinary solubility studies in both animals and man indicate that crystalluria in the form of either primidone or

its metabolite is unlikely to occur from therapeutic doses, except as an artifact caused by the cooling of urine below body temperature.

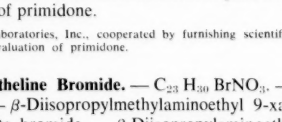
Primidone therapy is associated with undesirable side-effects, but serious toxic reactions have not been reported. No evidence of bone marrow depression or renal damage has been observed. Side-effects include drowsiness, ataxia, psychosis, vertigo, anorexia, irritability, lethargy, general malaise or fatigue, nausea, vomiting, morbilliform skin eruption, painful gums, leg edema, and nonrenal edema of the eyelids. Most side-effects are transitory or mild and may disappear with continuing therapy. When they are persistent or severe, reduction in dosage or complete withdrawal of the drug may be necessary.

Dosage.—Primidone is administered orally. In patients receiving no other anticonvulsant therapy, the usual initial dosage for children over 8 years of age and adults is 0.25 gm. once daily, preferably at bedtime. After 4 to 7 days the dosage may be increased gradually by increments of 0.25 gm. or less at weekly intervals, until the maximum therapeutic effect is attained with minimal undesirable side-effects. When the patient is receiving other anticonvulsant therapy, 0.25 gm. of primidone daily is added to the current medication. This daily dosage is then increased gradually with a concomitant corresponding decrease in the dosage of the agent to be replaced. The transition to primidone should not be completed in less than 2 weeks and, when complete replacement is clinically undesirable, combination therapy may be continued with possible advantage at lower dosage levels for both agents.

In children up to 8 years of age, therapy usually is started with 0.125 gm. of primidone a day, given at bedtime. This is increased by similar weekly increments until the optimal effect is achieved. The same initial dosage is employed for patients in this age group who are receiving another anticonvulsant drug, and, as with adults, gradual increments in primidone dosage should be accompanied by corresponding reductions in the dosage of the drug that is to be partially or completely supplanted. A maximum total daily dosage of 2 gm. should not be exceeded. When the drug is to be discontinued or replaced by other agents, its withdrawal should be gradual unless serious toxic manifestations require immediate cessation of primidone.

Ayerst Laboratories, Inc., cooperated by furnishing scientific data to aid in the evaluation of primidone.

Propantheline Bromide. — $C_{23}H_{30}BrNO_3$. — M.W. 448.42. — β-Diisopropylmethylaminoethyl 9-xanthenecarboxylate bromide. — β-Diisopropylaminoethyl xanthene-9-carboxylate methobromide. — The structural formula of propantheline bromide may be represented as follows:



Actions and Uses.—Propantheline bromide, the isopropyl analogue of methantheline bromide, has the same cholinergic blocking actions, uses, and side-effects. (See New and Nonofficial Remedies under the monograph on methantheline bromide.) Propantheline bromide is somewhat more potent (effective in smaller doses) and exhibits less severe, though not less frequent, side-effects. It should be used with the same precautions as methantheline bromide.

Dosage.—Propantheline bromide is administered orally or parenterally by either intramuscular or intravenous injection. Parenteral administration should be reserved for patients unable to take the drug orally. The average oral dosage for adults is 15 mg. three times daily with meals and 30 mg. at bedtime. For control of patients with peptic ulcer, more than the 15 mg. unit dosage is frequently required and some patients may require up to 60 mg. four times daily or an additional dose about the middle of the night. The average parenteral dosage for adults is 30 mg. every 6 hours intramuscularly or intravenously. For intravenous administration, a dose of 30 mg. should be dissolved in not less than 10 cc. of water for injection. Dosage always should be adjusted to the minimum required to control parasympathomimetic symptoms and should be in accordance with suitable dietary measures and other medication that may be indicated.

G. D. Searle & Co. cooperated by furnishing scientific data to aid in the evaluation of propantheline bromide.

Radio-Gold (Au^{198}) Colloid.—Radio-gold colloid is a radioactive isotope of gold. The radiations emitted by the isotope are negative beta particles and gamma radiations. The half-life of the isotope is 2.7 days.

Actions and Uses.—Radio-gold (Au^{198}) colloid is a colloidal concentrate of radio-gold (Au^{198}) from which suitably dilute solutions are prepared for parenteral injection. The radio-gold particles in the colloid range from 0.003 to 0.007 μ in diameter. The isotope, radio-gold (Au^{198}), is prepared from stable gold (Au^{197}) by neutron bombardment in a nuclear reactor. It has a half-life of 2.7 days and its radiation consists essentially of 0.97-Mev beta and 0.411-Mev gamma rays. Its mean effective life is 3.9 days, and about 95% of the radiation is delivered in 11 days. The colloid is quite stable to heat, but it should not be autoclaved under pressure. It may be mixed with saline or local anesthetic solutions, radiopaque mediums, pectin, and other agents, but it is readily flocculated by metallic ions such as aluminum.

Radio-gold (Au^{198}) colloid, given by intracavitary injection, is useful in dilute solutions for the irradiation of closed serous cavities in the palliative treatment of ascites and pleural effusion associated with metastatic malignancies. Dilute solutions also may be employed as a palliative prophylactic against the dissemination of tumor cells after surgical exposure and/or removal of tumors from these serous cavities, provided healing of the surgical wound by primary intention has begun. In the peritoneal or pleural cavities the radio-gold particles are absorbed on the walls in aggregates, which are then phagocytosed; some may be dispersed by transport via the lymphatics. The exact mechanism of intracavitary action is unknown. Although there is no evidence that it prolongs life, it contributes to the comfort of cancer patients by reducing fluid accumulation. Intracavitary ad-

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ministration should not be employed when the cavities are not definitely closed because of the hazard of radiological contamination by leakage, nor should it be employed when the presence of large tumor masses may indicate the need for other more effective methods of treatment. In the prophylactic intracavitary irradiation of disseminated tumor cells, the possibility of delayed healing or breakdown and leakage of subsequent surgical wounds should be kept in mind if further operative exposure becomes necessary during the effective life of the radioisotope. Intracavitary palliative irradiation with radio-gold should not be undertaken prior to establishing a diagnosis of malignant metastatic involvement.

Radio-gold (Au^{198}) colloid is not recommended for interstitial infiltration of malignant tumors such as discrete prostatic or female pelvic carcinomas and other tumor masses. Conclusive evidence is not available to indicate that its usefulness for this purpose, in comparison with other forms of treatment, is not outweighed by the hazard of radiological contamination caused by leakage from the site of deposition. Leakage may result from surgical exposure or ulcerating lesions that communicate with the exterior. The use of closed techniques for interstitial infiltration may reduce the hazard of leakage from accessible nonulcerating tumors, but this problem requires further study.

Radio-gold (Au^{198}) colloid should not be employed intravenously in the treatment of leukemia, because it is ineffective against acute leukemias and is inferior to the majority of other agents used in chronic leukemias.

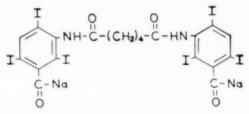
Intracavitary use may be followed by mild radiation sickness after 3 or 4 days and by decrease in the white blood cell count, which usually returns to normal within a few days after injection. Hypoplasia of the bone marrow has occurred in terminal cases treated with radio-gold colloid. Pronounced fibrosis also has been noted occasionally. Since patients become a source of radiation after treatment, appropriate evaluation of this is essential to avoid dangerous exposure of nursing and other personnel involved in their care.

It should be borne in mind in the handling of this radioisotope that the possible untoward effects of its predominant beta ray component (90 to 94%) are not completely understood and that in the use of large doses there is need for further caution to avoid excessive radiation of surrounding normal tissues by the smaller gamma ray component (6 to 10%).

Dosage.—Radio-gold (Au^{198}) colloid is administered by intracavitary injection in doses ranging from 35 to 150 mc. (millicuries). All fluid is removed from the affected cavity prior to injection, which can be made with equipment ordinarily employed for thoracentesis or paracentesis. In pleural effusion, the usual dose ranges from 35 to 75 mc. per cavity; in the larger peritoneal cavity, the dose usually ranges from 100 to 125 mc. To insure adequate distribution in the cavity, each dose should be diluted with isotonic sodium chloride solution to a volume of 250 to 500 cc., and the patient should be urged to move about occasionally after administration. If desired the colloid concentrate may be injected prior to dilution followed by instillation of the diluent. Doses should not be repeated at intervals of less than 4 weeks and then only as reaccumulation of fluid may require it. The colloid is available for shipment as a solution having an activity of 20 to 40 mc. per cubic centimeter.

Abbott Laboratories cooperated by furnishing scientific data to aid in the evaluation of radio-gold (Au^{198}) colloid.

Sodium Iodipamide.—$C_{20}H_{12}I_6N_2Na_2O_6$.—M.W. 1183.83.—Sodium N,N'-adipyl-bis(3-amino-2,4,6-triiodobenzoate).—Sodium iodipamide is prepared by dissolving the free acid in dilute sodium hydroxide and buffering the solution to pH 6.5-7.7. The salt is not isolated from the solution. The structural formula of sodium iodipamide may be represented as follows:



Actions and Uses.—Sodium iodipamide, a radiopaque water-soluble organic iodine compound, is useful as a roentgenographic contrast medium for intravenous cholangiography and cholecystography to visualize the biliary ducts and gallbladder when these structures or their contents cannot be adequately demonstrated by oral or intraductal contrast mediums. It is not recommended for routine gallbladder series, but for the specific indications noted subsequently. Intravenous cholangiography may be particularly useful for nonsurgical visualization of the biliary ducts, especially in patients with postcholecystectomy syndrome, and for cholecystography prior to surgery when the gallbladder has lost its power to concentrate bile. Intravenous administration may permit visualization of biliary structures in patients who are unable to ingest or absorb oral mediums and who cannot be depended upon to take the prescribed dose. Intravenous cholecystography also may be indicated when rapid visualization is essential for differential diagnosis in emergencies and prior to surgery. It is likewise suitable for cholecystography in infants and small children.

After intravenous administration, sodium iodipamide is promptly and rapidly excreted by the liver, the first traces appearing in the bile within several minutes. Within 15 to 20 minutes, a sufficient amount usually has accumulated to produce radiopacity of the hepatic and common bile ducts. Relatively high concentrations are found within 20 to 25 minutes. Concentrations in the bile may reach 30 to 100 times those in the blood. About one hour after injection, it begins to enter the gallbladder; generally the highest concentration is reached in 2 to 2½ hours. About 90% is finally eliminated in the feces, without absorption into the enterohepatic circulation. Unless liver function is impaired, about 10% or less generally is excreted by the kidneys. In the presence of liver damage, it is excreted by the kidneys in about the same time as that required by the normal liver.

Sodium iodipamide given intravenously usually is well tolerated when administered slowly. Transient restlessness, sensations of warmth, pressure in the upper abdomen, nausea, and vomiting may occur, especially after too rapid administration. Severe reactions have been

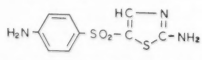
observed only rarely. It should not be administered to individuals hypersensitive to iodine. It is also contraindicated in patients with hyperthyroidism or with severe impairment of renal function. It should be used with caution in the presence of jaundice or impairment of liver function, especially when the latter is severe or associated with renal dysfunction.

Dosage.—Sodium iodipamide is administered as a 20% solution by slow intravenous injection into the antecubital vein for either cholangiography or cholecystography. An average of 10 minutes should be taken to complete injection of the usual dose. A preliminary test for sensitivity by either intradermal injection of 0.1 cc. or conjunctival instillation of two drops should be made prior to intravenous administration. Appearance of an intradermal wheal or an inflammatory reaction of the conjunctiva within 10 to 15 minutes indicates hypersensitivity.

The usual intravenous dose for adults is 40 cc. of a 20% solution (8 gm.). In thin asthenic patients, 20 cc. (4 gm.) may be adequate. For visualization of the biliary ducts, after usual preliminary preparation for cholecystographic procedures and a "scout film," the patient should be placed in a supine position with the left side elevated about 15 to 30 degrees. Serial roentgen ray exposures at 10 minute intervals should be started 20 minutes after intravenous injection and continued until optimal visualization is obtained. For examination of the gallbladder, exposures are made in the standard positions beginning about 1½ to 2 hours after injection. Additional exposures are made after ingestion of a fat meal. For infants and young children, an intravenous dosage of 0.6 to 1.2 cc. of a 20% solution (0.12 to 0.24 gm.) per kilogram of body weight may be used for cholecystography. A solution of the drug may be stored at room temperature but should be protected from strong light. Solutions kept in the syringe for prolonged periods of time prior to injection also should be protected from strong light.

E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corporation, cooperated by furnishing scientific data to aid in the evaluation of sodium iodipamide.

Thiazolsulfone.—$C_9H_9N_3O_2S_2$.—M.W. 255.31.—2-Amino-5-sulfanilylthiazole.—The structural formula of thiazolsulfone may be represented as follows:



Actions and Uses.—The actions of thiazolsulfone are similar to those of glucosulfone sodium; however, it is less toxic and may be administered orally. The urine of patients receiving the drug may become pink to cherry red in color, caused by the formation of an unidentified dye as a degradation product. The indications for use are the same as those for glucosulfone sodium, but thiazolsulfone seems to be of less value than other sulfones in the treatment of leprosy. The drug may be used in conjunction with streptomycin in the treatment of tuberculosis.

Although thiazolsulfone appears to be relatively free from toxic effects, vomiting, slight cyanosis, methemoglobin formation, and leukopenia occur occasionally. Thyroid enlargement occurs after 2 to 5 months of treatment, and in young persons, prolonged treatment may cause the development of secondary sex characteristics without true sexual maturation.

Dosage.—For adults the initial daily dose should not exceed 4 to 6 gm. given in divided doses. This dose may be increased after the first week by increments of 1 gm. daily until the level of tolerance is reached. For children, the initial daily dose should be 1 gm. given in two divided doses and increased slowly until a blood level of 2 to 3 mg. per 100 cc. is maintained, or until a total daily dose of 5 gm. is reached. After 6 months of treatment, dosage should be reduced to a maintenance level of 1 gm. daily. Any evidence of intolerance or intoxication is an indication for reduction in dosage or cessation of therapy.

Parke, Davis & Co. cooperated by furnishing scientific data to aid in the evaluation of thiazolsulfone.

Crystalline Trypsin.—Crystalline trypsin is a purified preparation of the pancreatic enzyme derived from mammalian glands.

Actions and Uses.—Crystalline trypsin exerts its characteristic proteolytic action upon contact with clotted blood, exudate, and necrotic tissue within a pH range of 5 to 8, optimal at about pH 7. It is inactive on and not harmful to viable tissue because of the presence in serum of a specific trypsin inhibitor and nonspecific inhibitory substances. Such inhibition likewise limits the duration of its proteolytic effect on coagulated blood and exudate.

Crystalline trypsin is useful as an adjunct to surgical management for débridement of necrotic wounds and ulcers, abscesses, empyemas, sinuses, and fistulas. It is also useful to separate eschar from second degree burns and to liquefy hematomas, including intrapleural blood clots in hemothorax. It is not nearly as effective for removal of necrotic tissue as for liquefaction of coagulated blood and exudate. It is chiefly effective in cavities and infected joint spaces where the anatomic configuration permits adequate incubation before extravasation of serum and inactivation of the enzyme can occur. Its action in such cavities also is limited to hematomas and exudate that have not become organized by fibrous tissue. Special caution is necessary in tuberculous empyema because of the possibility that digestion of coagulated exudate may lay bare diseased areas of the visceral pleura and favor the development of a bronchopleural fistula. It should be employed with similar caution in preexisting bronchopleural fistula caused by tuberculosis.

The toxic effects of crystalline trypsin are negligible when the drug is applied topically by local infiltration or irrigation and by intrapleural instillation. When administered by hypodermic infiltration or by instillation into closed cavities or spaces, it produces a histamine-like effect consisting of a mild elevation of temperature and an increase in pulse rate. This reaction may be prevented by preliminary administration of an antihistaminic drug. The enzyme should not be injected into areas of acute inflammation or into normal tissue. On surface lesions, the dry form of the enzyme may produce a severe burning sensation occasionally, especially when the blood supply is poor. A topical anesthetic may be

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used prior to surface application or antihistaminic medication can be used to alleviate local stinging and pain.

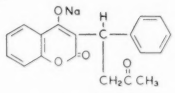
Crystalline trypsin is contraindicated in severe hepatic insufficiency such as acute yellow atrophy or advanced cirrhosis of the liver. Application to actively bleeding cavities also is definitely contraindicated. Likewise it should not be used for débridement of ulcerated carcinomas because of the danger of extending the malignancy. Sensitization or antigenic reactions have not been observed, but this possibility should be kept in mind. The inhalation of an aerosol to liquefy and stimulate expectoration of excessive bronchial secretions is not advised because the questionable clinical benefit of this procedure is outweighed by irritant side-effects. Topical preparations never should be administered intravenously.

Dosage.—Crystalline trypsin is applied to surface lesions either in dry form by means of a powder blower or in a freshly prepared suitable buffer solution by means of wet dressings. For less accessible lesions, such as abscesses, sinuses, and fistulas, the solution may be infiltrated, instilled, or used as an irrigant with a syringe and needle or small catheter; the dry form placed in small gelatin capsules also can be implanted in sinus or fistulous tracts that are difficult to irrigate. For intrapleural administration, the technique of thoracentesis is used; aspiration and irrigation to remove retained fluid should precede instillation of the enzyme. Aspiration 2 hours after each instillation into cavities is advisable to avoid untoward effects.

Crystalline trypsin is assayed for potency on the basis of its decomposition of hemoglobin and the comparative reaction of substances so liberated with that of tyrosine against a standard reagent. The activity is expressed in units or milligrams; 1,000 units is equivalent to 1 mg. of tyrosine or to 1 mg. of lyophilized crystalline trypsin. Crystalline trypsin is stable indefinitely in dry form at room temperature, but, when placed in a suitable buffer solution, 75% of its activity is dissipated within 3 hours. Thus only fresh solutions should be used for wet dressings or for instillation, infiltration, and irrigation. With either dry or wet applications of the enzyme, it is desirable to determine the pH of accessible lesions prior to instituting therapy; this can be determined with the use of nitrazine paper. When the pH is outside the range of 5 to 8 or the lesions are incrusted or dry, the area to be treated should be irrigated or brought into continuous contact for several minutes with Sorensen's phosphate buffer solution before application of the dry powder. For such lesions, wet dressings are prepared by using a fresh solution of 250 mg. (equivalent to 250,000 units) of the crystalline enzyme in 25 cc. of Sorensen's buffer solution as a diluent. That amount usually is adequate also for intrapleural instillation; however, dosage is dependent upon the size, character, and location of the lesion to be treated. Wet dressings and irrigations should be repeated every 3 hours. When the dry powder is used on surface lesions, a thick coating should be applied and maintained. For small areas the powder may be reapplied every 15 to 30 minutes; for large areas reapplication should be made at least every 3 hours. For capsule implantation in sinus or fistulous tracts, the dose is limited by the number and size of capsules that can be inserted. When infiltration or instillation of the solution is employed, this may be repeated once or twice daily as indicated by the condition of the lesion under treatment.

The Armour Laboratories cooperated by furnishing scientific data to aid in the evaluation of crystalline trypsin.

Warfarin Sodium.—$C_{19}H_{15}NaO_4$.—M.W. 330.32.—3-(α-Acetomylbenzyl)-4-hydroxycoumarin sodium.—The structural formula of warfarin sodium may be represented as follows:



Actions and Uses.—Warfarin sodium is a coumarin derivative that produces the blood anticoagulant activity characteristic of similarly acting compounds. It reduces the prothrombin concentration and prolongs the clotting time of the blood, presumably by an action on the liver that reduces prothrombin production. Thus it is useful for the prevention and treatment of diseases resulting from or complicated by intravascular clotting. (See the monographs on bishydroxycoumarin and heparin sodium in New and Nonofficial Remedies.)

Like other systemic anticoagulants, warfarin sodium does not affect thrombi or emboli already formed, but it retards further intravascular clotting. It may prevent propagation of such clots and permit their dissolution by blood enzymes. Unlike other similar compounds, warfarin sodium can be administered intravenously as well as orally. Intravenously, it acts less rapidly than heparin sodium but more rapidly than older, orally administered coumarin derivatives. It is readily absorbed into the blood after oral administration and also may be employed by this route as an adjunct to initial parenteral therapy. Warfarin sodium is effective in small doses by either parenteral or oral administration, and its duration of action is longer or at least as long as previously available coumarin derivatives. As with other anticoagulant drugs, overdosage may result in hemorrhagic complications; hence frequent determinations of blood prothrombin determinations should be carried out. Salicylates are potentially capable of enhancing the hemorrhagic effect of the drug. In the event of overdosage, therapy should be temporarily discontinued and vitamin K_1 should be employed along with blood transfusion to combat hemorrhage. The drug should not be administered in the presence of visceral bleeding, a preexisting hemorrhagic diathesis, subacute bacterial endocarditis, or impaired hepatic or renal function. Also, it should not be administered to patients recovering from operations on the brain or spinal cord or who are undergoing continuous tube drainage of the stomach, intestine, or urinary tract in the presence of ulceration. It may be used with caution in patients similarly undergoing continuous tube drainage in the absence of ulceration.

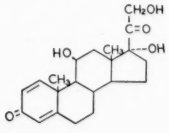
Dosage.—Warfarin sodium is administered intravenously or orally. The blood prothrombin time should be

determined prior to and after the initial dose, and thereafter at intervals of 24 to 48 hours during the first 2 weeks and not more than 3 days apart for the second 2 weeks. For longer therapy, prothrombin determinations may be made at weekly intervals.

Intravenously, an initial single dose, calculated on the basis of 1 mg. per kilogram of body weight (but not less than 60 mg. nor more than 75 mg.), may be expected to prolong a normal prothrombin time in the therapeutic range of 25 to 45 seconds (whole plasma) within 12 to 18 hours for a period of 5 to 6 days. Subsequent intravenous doses should be approximately two-thirds of the original dose and should be administered after the prothrombin time begins to recede from its peak. Alternatively the second and succeeding doses may be given orally, either 12.5 mg. daily or 25 to 50 mg. every 2 to 4 days. Oral dosage in the latter range usually produces a hypoprothrombinemia lasting about 3 days and should be spaced accordingly. If the oral route is employed initially, a single dose of 75 mg. to 100 mg. produces a therapeutic hypoprothrombinemia lasting 2 to 5 days. Subsequent oral doses should follow the same schedule as when following initial intravenous administration. Patients who are vomiting or have undergone extensive surgery may be more susceptible to the drug, and in such cases the initial intravenous or oral dose should be reduced to 25 or 50 mg. (one-third to two-thirds of the usual initial dose). Because of a latent period of about 12 to 18 hours between administration of the initial intravenous or oral dose and its prolonging effect on blood prothrombin time, it may be advisable to initiate anticoagulant therapy with intravenous heparin sodium in emergency situations. In such cases an appropriate initial dose of heparin sodium may be administered intravenously at the same time or in the same syringe with the proper initial dose of warfarin sodium. The shorter-acting heparin sodium produces a prompt therapeutic effect lasting about 4 hours and can be separately injected again once or twice to cover the latent period before the effect of warfarin sodium is manifest.

Endo Products, Inc., cooperated by furnishing scientific data to aid in the evaluation of warfarin sodium.

Prednisolone. — $C_{21}H_{28}O_5$. — M.W. 360.46. — $\Delta^{1,4}$-pregnadiene-3,20-dione-11,17α,21-triol.—The structural formula of prednisolone may be represented as follows:

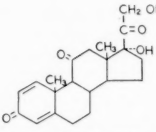


Actions and Uses.—Prednisolone, a dehydrogenated analogue of hydrocortisone, exhibits the same systemic actions and has about the same potency as prednisone. (See monograph on prednisone.) It is less irritant to tissues because of its greater solubility and therefore may be suitable for intra-articular injection.

Dosage.—Prednisolone is administered orally in the same dosage as prednisone. (See monograph on prednisone.) The concentration and dosage for intra-articular injection has not been determined.

Schering Corporation cooperated by furnishing scientific data to aid in the evaluation of prednisolone.

Prednisone. — $C_{21}H_{26}O_5$. — M.W. 342.44. — $\Delta^{1,4}$-pregnadiene-17α,21-diol-3,11,20-trione.—The structural formula of prednisone may be represented as follows:



Actions and Uses.—Prednisone, a dehydrogenated analogue of cortisone, shares the actions and uses of the other glucocorticoids employed clinically. It should prove valuable as substitution therapy in frank adrenal insufficiency such as occurs in adrenal cortical hypofunction (Addison's disease) or panhypopituitarism or after adrenalectomy. Prednisone has been shown to control the symptoms of the collagen diseases, including rheumatoid arthritis, disseminated lupus erythematosus, periarteritis nodosa, dermatomyositis, and scleroderma. As with cortisone and hydrocortisone, prednisone generally is effective in the collagen diseases only while therapy is continued. It also has been demonstrated that it has value in the symptomatic management of allergic states, especially intractable bronchial asthma. It is anticipated that prednisone will prove valuable in the symptomatic control of acute rheumatic fever, pemphigus, and the neoplasias of the lymphatic system, as well as other diseases responsive to cortisone and hydrocortisone.

It should be borne in mind that prednisone is an extremely potent compound and that therapeutic dosages will depress the function of the adrenal cortex. It should be used with the same precautions as observed with cortisone and hydrocortisone. Despite the lessened likelihood of sodium retention and potassium excretion, measurement of fluid intake and output and daily weighing of the patient should be performed to give early indication of fluid retention, especially if the diet is without sodium restriction and potassium supplementation. Potassium depletion should always be considered and guarded against. The drug should be withdrawn gradually on cessation of therapy to afford the adrenal an opportunity to recover from the partial atrophy occurring during extended treatment. As with the other glucocorticoids, surgical or medical emergencies in the immediate post-treatment period and before full adrenal recovery may require reinstitution of treatment with prednisone or another glucocorticoid to avoid possible acute adrenal deficiency.

Dosage.—The dose of prednisone, as with the other glucocorticoids, varies with the severity of the disease under treatment and with the individual patient. The drug is administered orally. To control severe conditions a suppressive dosage of 30 to 50 mg. of prednisone daily,

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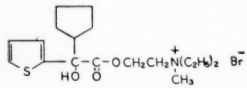
divided into four doses, may be required. The suppressive doses may be continued for a period of 2 days to a week then decreased by decrements of 5 or 10 mg. every 4 or 5 days until signs and symptoms recur. The maintenance dose for each patient should be established at the lowest possible daily dosage to maintain comfort and to eliminate signs of the disease being treated. For milder conditions, 5 to 25 mg. daily have proved effective. If it is thought desirable to transfer a patient from cortisone or hydrocortisone therapy to prednisone, an initial dose of 25 to 50% of the steroid originally used should be employed and the dose should be decreased or increased according to the response of the patient.

Schering Corporation cooperated by furnishing scientific data to aid in the evaluation of prednisone.

Penthienate Bromide. — $C_{18}H_{30}BrNO_3S$. — M. W. 420.43. — 2-diethylaminoethyl α-cyclopentyl-2-thiopheneglycolate methobromide. — 2-diethylaminoethyl 2-cyclopentyl-2-(2-thienyl) hydroxyacetate methobromide.—The structural formula of penthienate bromide may be represented as follows:



Actions and Uses.—Penthienate bromide is an anticholinergic agent that inhibits gastric secretion and motility of the gastrointestinal tract. Its antisecretory effect on both volume and acidity of gastric juice makes the drug suitable for use as an adjunct to dietary measures, antacids, and other medication in the management of peptic ulcer (gastric and duodenal). Penthienate bromide also has been employed in hyperhidrosis, but it appears to be less effective than in gastric hypersecretion. The spasmolytic effect of the drug is more pronounced on the upper than on the lower portion of the gastrointestinal tract; thus penthienate bromide can be expected to inhibit pylorospasm more effectively than spasm of the colon. Its usefulness in gastritis not associated with gastric hyperacidity has not been established. Clinically the drug appears to be helpful in about two-thirds of patients with spastic colon (irritable bowel, mucous colitis, functional diarrhea), but more adequate physiological studies in human beings are needed to determine its ultimate usefulness for this purpose. It has not been found effective in chronic ulcerative colitis.

Penthienate bromide produces atropine-like side-effects in common with other anticholinergic agents that block parasympathetic nerve impulses. At its therapeutically effective dosage level, mouth dryness is common. This rarely is severe enough to necessitate withdrawal and may tend to disappear with continued administration of the drug. Some patients may experience headache, blurring of vision (mydriasis), difficult urination, and constipation or, more rarely, effects on the cardiovascular system such as chest pain, tachycardia, and vertigo. Serious toxic effects have not been encountered. The drug is contraindicated or should be used with caution in glaucoma, urinary bladder neck obstruction, prostatic hypertrophy, cardiac decompensation, coronary insufficiency, achalasia, cardiospasm, and duodenal or pyloric obstruction (until relieved).

Dosage.—Penthienate bromide is administered orally. The usually effective dose for adults ranges from 5 to 10 mg. four times daily. The dose should be individualized, usually at a level sufficient to produce slight mouth dryness. Doses below this level are likely to be ineffective. A dose of 10 mg. four times daily may be required initially in some patients to bring symptoms under control; a total daily dosage of 40 mg. should not be exceeded, and such amounts should not be administered continuously for long periods. Lesser doses usually are adequate for maintenance therapy. In peptic ulcer the drug should supplement other medical management.

Winthrop Laboratories, Inc., cooperated by furnishing scientific data to aid in the evaluation of penthienate bromide.

COMMITTEE ON COSMETICS

Report to the Committee

The following report has been prepared at the request of the Committee.

VERONICA LUCEY CONLEY, *Secretary.*

TREATMENT OF ACNE SCARS BY DERMABRASION

ROTARY BRUSH METHOD

Herbert Rattner, M.D., Chicago
and
Charles R. Rein, M.D., New York

A subject that has aroused a great deal of discussion in dermatological circles concerns the dermabrasion treatment for acne scars. In 1952 Kurtin [1] presented this method of refrigeration-abrasion, which he termed skin planing. Seldom has a new treatment method engendered so much interest. Some resolutely refused to endorse the therapy, and others were enthusiastic about it to an unwarranted degree. The method has since been tried and accepted by many dermatologists throughout the country. Modifications have been introduced and experiences recorded, and now a large enough number of cases have been observed for a long enough period so that a status report of the method seems timely.

The information that seems to interest physicians most involves not only the technical details but such aspects as the types of scars that respond best to the therapy, length and character of convalescence, discomfort involved, complications, frequency of treatments, and probable results.

Professor and Chairman, Department of Dermatology, Northwestern University Medical School, and Editor, *A. M. A. Archives of Dermatology* (Dr. Rattner) and Associate Professor of Clinical Dermatology and Syphilology, New York University Post-Graduate Medical School (Dr. Rein).

1. Kurtin, A.: Corrective Surgical Planing of Skin, A. M. A. Arch. Dermat. & Syph. **68**: 389 (Oct.) 1953.

HISTORICAL

The so-called dermabrasion or planing operation is new in technique only, not in principle. In the past, numerous measures were devised to eradicate acne scars, but all of them were found wanting. The various methods consisted of scarification, electrodesiccation, surgical excision, surgical shaving, chemical caustics, cryotherapy (usually by means of a slush made of carbon dioxide or dry ice and acetone), and mechanical abrasion with sandpaper. The last named has been the most widely publicized method in recent years.

The planing method, while employing the same basic principle of abrasion as the sandpaper treatment, has additional innovations that improve immeasurably both the technique and the clinical results. It employs a refrigeration-type anesthesia that both facilitates abrasion and controls bleeding. The narrow steel brushes and specially designed spray localizers permit the treatment of small pits and areas, such as the nasolabial fold, that are otherwise not readily accessible. The method constitutes an improvement over the sandpaper technique also in that it eliminates the potential risk of the later development of silica granuloma. Then too, this operation is performed in the office; general anesthesia is not required.

APPARATUS AND TECHNIQUE

The abrading device consists of a motor mounted on a stand to which a flexible shaft is attached. At the end of the shaft is a handpiece with provisions for inserting and tightening the wire brush mandrel. The speed of rotation of the brush is controlled by a foot-operated rheostat.

The operation should be performed in a well-ventilated room and should begin with the application of chilled packs, containing a 5% solution of propylene glycol, on a clean skin (freshly shaved, cosmetics removed) for about 20 minutes. The scalp is covered with an operating-room cap or bathing cap, as hairs entangled in the brush may snap the spring in the sensitive handpiece. Cotton is plugged into the ear canals and into the nostril on the side to be planed. The lips are greased with petrolatum, the eyelids covered. The base of each pit is dotted with gentian violet solution to serve as a guide for planing depth. A course spray of ethyl chloride is then directed to an area with scars; simultaneously a current of air from a blower or fan is directed to the area to hasten both the evaporation of the ethyl chloride and the freezing of the skin. The preferred blower is mounted on a stand and has a flexible elongated nozzle, so that the air-flow direction can be "pinpointed" on the area to be treated. The area freezes white almost immediately, and the skin becomes anesthetized and rigid. To render the surface flat, the operator then applies slight tension to the skin with a wooden tongue blade held with his free hand. The scars are then abraded by the motor-driven wire brush, which is manipulated in short strokes with a firm hand in a direction vertical to the rotating direction of the brush in order to avoid grooving. The procedure is repeated, progressing from area to area, until all the scars have been planed (until all the gentian violet has been brushed away).

Such matters as to how much pressure to apply, the width of the brush, the angle of the blades, and the number of "abrasions" are determined entirely by experience. Blood-oozing from the frozen sites is minimal and dries quickly. A sterile dry dressing is applied until the oozing stops, and the entire face then is dressed with Telfa dressings (fabric plus plastic) applied rather firmly. Some operators apply dressings of sterile petrolatum, others employ antibiotics in dressings and/or by mouth. We instruct patients to remove the dressings, which become blood-tinged, after 24 hours; others instruct the patients to remove them after a few hours or not for three or four days. No further dressings are required. Most patients find the procedure to be painless, although a few, after the planing and before the bandages are applied, complain of a burning sensation much like that of a skinned knee. The younger patients "take it in stride"; the older ones speak of an "emotional experience," particularly when the bandages are removed, because the sight is frightening to some. The skin is red and markedly swollen—enough to shut the eyes in some cases—and covered with dried blood and scabs as though the face had been burned severely. The scabs drop off in 7 to 10 days. After the second week, patients usually return to their normal activities, although a fastidious person may choose to remain home for another week because of the redness. The edges of the scars begin to recede by the fourth week, and the improvement continues steadily for several months, so that patients usually look their best about six months after the operation.

The results of treatment depend a great deal upon the skill of the operator and the depth and shape of the scars. Flat superficial scars respond better than do deep-pitted so-called ice-pick type of scars or the wide, flat confluent scars that produce an undulating appearance of the skin. Unfortunately the latter types occur all too often and produce the most severe cosmetic defect, so that persons who need help most get it least. The results are seldom dramatic, although the majority of patients are pleased with the cosmetic improvement. In many cases the improvement in the patient's well-being is so striking that it leads us to believe that we have taken too lightly the importance to the patient of acne scars. The treatment may be repeated several times at intervals of four to six months if necessary. The age of the patient is not important, although results seem to be better in younger persons. The presence of a few acne lesions should not interfere with the treatment.

The procedure may also be used for the treatment of scars from herpes zoster, chickenpox, or smallpox. Scars from chickenpox, because of their flattened shape, respond exceptionally well. It has been suggested also for the treatment of tattoo marks, keratoses, nevi, and other benign growths, but there are better methods of treatment for such lesions.

COMPLICATIONS

The complications that are occasionally observed are relatively unimportant. On rare occasions impetigo, which is readily controlled by treatment with antibiotics,

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develops in the second week. More often, milia may appear some weeks later. These disappear in time; emptying them does hasten their involution. In exceedingly rare instances, postoperative redness has persisted for several months instead of for the usual three or four weeks. This may result from excessive refrigeration, overexposure or premature exposure to sunlight after the operation, or overly vigorous cleansing. In rare cases hyperpigmentation at the edges of abraded areas, or as a mottling of the entire abraded area, develops and persists for a while. The appearance of eczematous patches has been recorded, and the much dreaded complication of hypertrophic scar development has also been recorded, albeit rarely. We have encountered five cases in which small hypertrophic scars developed, but in each case the scars were readily flattened by treatment. We have heard of larger "keloids" developing but have seen no authentic reports of such cases.

MODIFICATIONS

In recent months we have replaced ethyl chloride with the freezing agent Freon 114 (Frigiderm, dichlorotetrafluoroethane) because, unlike ethyl chloride, it is nontoxic, has no general anesthetic properties, and is nonflammable and nonexplosive—in short, as Wilson has said, "It does the work of ethyl chloride without the dangers of ethyl chloride." [2] An additional advantage is that ethyl chloride disperses the gentian violet and thus may mask the field of operation, whereas Freon 114 does not. Then, too, with Freon the sometimes nerve-racking noisy blower becomes an unnecessary piece of equipment.

Freon is supplied in spray-type containers. At the annual meeting of the A. M. A. on June 6, 1955, Wilson demonstrated a "jet spray," not yet available, which is attached to the planing handpiece and receives the refrigerant through a tube from a container mounted on the motor standard. It is equipped with finger-button controls, which make it a one-man, timesaving device. A "pneumatic freezing unit" has been designed by LeVan [3] to deliver the ethyl chloride spray under a stream of compressed air, the procedure being controlled by a foot pedal. Eller [4] has employed a faster motor and instead of a steel wire brush uses an emory stone wheel first suggested by Schreuss.

Some physicians routinely use analgesics and antibiotics preoperatively and postoperatively. We employ these measures only in selected cases. Some operators treat only a small area at a time, in order not to confine the patient, but the results, in our experience, are more satisfactory when the entire face is treated at one time.

COMMENT

The tremendous interest in the dermabrasion technique shown by both physicians and patients reveals the amazing importance and often-exaggerated importance of a scarred skin to a person's emotional well-being. In the beginning, and understandably, practically every patient who sought treatment for scars was treated. The limitations of the treatment were not fully realized, and inevitably the technique was both abused and misused, and most unfortunate were the unduly glowing accounts of the treatment that appeared in some newspapers and popular magazines.

The operation to flatten scars is a cosmetic procedure, not a lifesaving one; therefore, careful selection of patients is as ethical a plan as it is wise. To treat a patient who expects a perfect result is to invite unpleasant consequences, because the results of treatment are usually good rather than dramatic. It is unwise also to treat unstable persons who attribute all of their inadequacies to the scars, although on two occasions, at the request of psychiatrists, we have treated patients with scars from neurotic excoriations with happy results. As has been mentioned, though they can be helped, the results are not what one hopes for when the scars are deep, narrow, and sharp-edged, the so-called "ice-pick" type scars, or when they are wide and confluent, causing an undulating appearance. Then, too, this type of skin usually is riddled, especially in the central oval portion of the face, with patulous pores, and wide pores cannot be improved by treatment. Results from treatment are more satisfactory on the face than on the chest, shoulders, back, or neck. Scars of recent origin apparently respond better to the treatment than do old scars. We prefer, for the time being, not to treat youngsters whose acne is still in the active stage. For one or another of these reasons we now reject two to three out of five persons who apply for the treatment.

Before treatment it is important to discuss the problem thoroughly with the patient in the presence of a relative and to stress, when necessary, that the results may fall somewhat short of the patient's expectations. The whole experience will be more pleasant if the patient is sufficiently intelligent and emotionally conditioned to be content with improvement, even after two or three operations, rather than complete cure—and, incidentally, it is tempting fate to try to foretell the amount, percentage-wise, of improvement to be expected from treatment. It is better for a patient not to decide on an operation during the first interview, for it is an emotional experience and should be considered calmly and carefully.

CONCLUSIONS

A realistic consideration of the dermabrasion technique indicates it to be the best treatment yet devised for the improvement of acne scars. Although the treatment does not produce "miraculous new skin," superficial flat scars sometimes respond with striking results; other types are benefited in various degrees. In general, the majority of patients are satisfied with the results; occasionally, the results are more pleasing to the patients than to the physician. Unfortunately, not every patient with acne scars can be helped sufficiently, but, if particular care is exercised in the selection of the patients, a great deal of good can be done for a great many persons, cosmetically as well as emotionally.

2. Wilson, J. W.; Luikart, R., II, and Ayers, S., III: Dichlorotetrafluoroethane for Surgical Skin Planing: A Safe Anesthetic-Refrigerant, A. M. A. Arch. Dermat. **71**: 523 (April) 1955.

3. LeVan, P.: Mechanical Method of Freezing the Skin for Surgical Planing, A. M. A. Arch. Dermat. & Syph. **69**: 739 (June) 1954.

4. Eller, J.: Types of Rotary Skin Abrasives for the Removal of Acne Scars, Tattoo Marks and Other Skin Defects, to be published.

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STATEMENT BY THE BOARD OF TRUSTEES

REASONS FOR A. M. A. STAND ON COMPULSORY SOCIAL SECURITY COVERAGE OF PHYSICIANS

The current position of the American Medical Association relative to the inclusion of physicians under the Social Security Act, as set forth in the proceedings of various meetings of the House of Delegates, especially those since 1949, can be stated briefly as follows: Physicians are definitely opposed to compulsory coverage under Title II (Old-Age and Survivors Insurance) of the Social Security Act, but are not opposed to voluntary coverage thereunder. Reasons for this position are stated below, not necessarily in order of importance.

(1) Since Bismarck introduced socialized medicine in Germany three quarters of a century ago, the threat of socialized medicine through the extension of so-called social insurance has been ever-present in Western civilization. One nation after another has succumbed to the drive to extend the compulsory system of taxation called social insurance to finance a vast program of medical and hospital care for taxpayers and nontaxpayers. The history of developments in this field in foreign countries has alerted the medical profession to the usual consequence of a federal social security program.

(2) Most self-employed physicians do not retire; nor do they have any intention during their early professional lives of retiring at a fixed age. Currently about six physicians out of seven in the age group 65-75 are engaged in the active private practice of medicine. This is so because they can still utilize their accumulation of knowledge and skill to minister to sick people and because sick people still want these physicians to serve them. It has often been said that the only way a self-employed physician can actually retire is to move out of the community in which he has practiced. This observation was published in the printed hearings of the Senate Finance Committee on Social Security Amendments dated July 6, 1954. Thus, the provisions of the Old-Age and Survivors Insurance sections of the act simply do not fit the economic pattern of the self-employed physician.

(3) Since most self-employed physicians do not retire, the tax imposed upon them by coverage under O. A. S. I. would be unjust and unreasonable. They would be required to pay the tax long after most gainfully employed persons in other occupations have ceased to pay it and have started to draw their pensions. The amendments to the Social Security Act of 1954, which, in part, lowered the minimum age from 75 to 72 after which unlimited earnings do not prevent payment of pension benefits, reduced this inequality to some extent but did not eliminate it.

(4) The program is not really an "insurance" program as it is called. According to a published report of the Subcommittee on Social Security of the House Ways and Means Committee, 83rd Congress, retired beneficiaries under O. A. S. I., as of December, 1952, have received and/or would receive, on the average, pension benefits equal to approximately $24 for each fifty cents paid in during the working years of their lives. This ratio was again raised, to about $30 for each fifty cents paid in, by the 1954 amendments to the Social Security Act.

(5) Physicians as a group do not seek federal charity. The amount of the windfall benefit under Title II of the Social Security Act is not difficult to estimate. With a reduction since 1900 of almost 30% in the mortality rate between the ages of 65 and 75, the average remaining lifetime at age 65 is now about 153 months for a man and 180 months for a woman. By simple arithmetic it can be seen that paying a retired man, on the average, 153 monthly checks of $100 each, amounts to $15,300; paying a woman 180 monthly checks of $100 each, totals $18,000. These amounts do not cover survivorship benefits. If a man started to pay Social Security taxes on January 1, 1937, and paid taxes every month, he would not have paid more than $753 by the end of 1955. With the additional $753 paid by his employer the combined total is about one tenth of the $15,000 needed to finance the primary pension under O. A. S. I., let alone survivorship benefits for his widow and children. The differences between what he and his employer paid in and the cost of his pension to the government is, of course, the extent of his windfall benefits.

The deficit of $13,500 will be paid by younger taxpayers and future generations. The argument that we should accept these windfall benefits because almost every eligible citizen will has little appeal to physicians when their basic struggle is to preserve the free practice of medicine.

(6) In preference to compulsory coverage under the Social Security Act, the medical profession is giving its active support to the Jenkins-Keogh bills. These bills (H. R. 9-10, 84th Congress) would amend the Federal Internal Revenue Code so that self-employed physicians and others would have the same tax deferment advantages on the amounts set aside for retirement as are now enjoyed by the officers and employees of corporations, associations, and others.

The bills would provide prepaid pensions for all who are willing to save. We believe that our country is so diversified and that people earn their livings under so many different conditions that it is wise public policy for the Congress to provide a flexible pension system for the self-employed and to permit the pensionless employed to participate in the same voluntary program.

Contrariwise, we consider it incompatible with the free enterprise system for a group to be compulsorily covered under a governmental system of old age benefits when that group strongly opposes such coverage.

SECOND INJECTION OF POLIOMYELITIS VACCINE

When poliomyelitis vaccine was packaged for distribution some months ago, directions for use were included in the packages. These directions are now causing some confusion, since the original package inserts may not contain current recommendations but rather the schedule used in the 1954 field trial. Actually, the situation can be simply stated so far as most recent recommendations from Dr. Jonas Salk are concerned. They are in line with statements appearing in the August 6, 1955, issue of THE JOURNAL, pages 1244-1246. The second dose can be given as early as two weeks after the first, although the optimal time is felt, by Dr. Salk, to be four to six weeks. The third dose should be given approximately seven months or longer after the second dose. Southern physicians, of course, may have to adjust their schedules because the poliomyelitis season arrives earlier there than in the northern part of the country. So far as is known, there is no reason why the vaccine that is now available cannot be used, if such use is indicated, regardless of when it was prepared and regardless of the directions for use inside.

Physicians who have given two doses one week apart need not give additional inoculations but should give the third dose at seven months, or longer, after the second. Those who have given three doses, over a period of five weeks, as recommended in the package enclosures, should plan on a booster dose not less than seven months after the last dose in the primary series.

DERMABRASION

Dermabrasion or skin planing is an improved technique based on the centuries old principle that abrasion is a means of smoothing the scarred skin. It was first reported in medical circles several years ago. Since then experience has accumulated in the use of skin planing, particularly in the treatment of the pits and scars of acne. In spite of enthusiastic and premature publicity, which has distorted the true picture, no conclusive statements on the real significance of dermabrasion can yet be made. However, enough patients with acne scars have been treated and observed for a sufficiently long period to warrant a status report to the Committee on Cosmetics (see this issue, page 1299).

Enthusiasm for this method should not be discouraged, but its limitations must be clearly understood by the physician and the patient. Dermabrasion can improve skin appearance in many patients; it cannot help others. Often those who need it most obtain the least relief. The careful selection of patients has become a dependable guide to successful results. Consideration of many factors, including the degree and type of scarring and the psychological state of the patient, has led some dermatologists to reject as many as three out of five who seek treatment. In dermabrasion as in other procedures where the improvement of appearance is the goal, success cannot be measured entirely by the physician's objective evaluation. Those who suffer from severe acne scarring and obtain the least skin improvement are often more enthusiastic about results than the less disfigured patient who experiences marked improvement by the physician's standards. Complete dissatisfaction can be expected in those persons who regard their scarred skin as solely responsible for their failures and discontentment in life. An improved skin will not have the magical effect of bringing them the social and economic success that they expect. On the contrary, it removes the excuse the patient has used for his failures. There is a real possibility in such patients that harm will be done by converting a minor psychological disturbance into a severe one.

These experiences in the treatment of acne scars will lead to a better understanding of the usefulness of dermabrasion in other types of scars and blemishes.

LOS ANGELES CONVENTION

The Los Angeles County Medical Association is sponsoring an assembly to be presented at the Biltmore Hotel and the Philharmonic Auditorium in Los Angeles, January 3, 4, and 5, 1956. The theme will be "Eighty-Five Years of Medical Progress." One half day will be devoted to each of six subjects: "Medicine's Role in the Atomic Age," "Modern Concepts in the Utilization of Blood and Blood Products," "Diagnosis and Treatment of Neoplastic Diseases," "Preventive Medicine," "Use and Misuse of Miracle Drugs," and "Management of the Geriatric Patient."

This program may not seem unusual except for the fact that it is tied in with an 85th anniversary; however, there is another feature that may lead to similar interesting developments elsewhere. The county association is sponsoring an event for the public, a Public Health Fair. It will be known as "A Cavalcade of Health and Medical Progress" and will run for 10 days beginning the morning of January 6. The 10 days will be devoted to medical lectures, motion pictures, commercial exhibits with a health story, and scientific exhibits prepared by medical schools, hospitals, clinics, research organizations, and other groups. The Los Angeles School Board has promised its cooperation and is making plans to allow the school children to attend these public meetings en masse. There also is being prepared a special health education program for the teachers, for which they will receive "institute credit." The superintendent of schools has appointed a committee of three physicians from his staff to work with the Los Angeles County Medical Association to develop a program suitable for both student and teacher.

Such a program should provide a stimulating avenue to similar ventures elsewhere. Health fairs or their counterparts have been held in other parts of the country and have been well received. Many will remember, for example, the show for the public following the A. M. A. meeting in Miami in 1954. It is doubtful, however, if local school authorities have ever previously participated to such a degree.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

I have received many letters from men all over the country complaining about the so-called doctor-draft extension for two years. The American Medical Association has been criticized for not protesting more forcibly against this discriminatory law. We did protest, but our protestations were of no avail when at the last minute the doctor-draft provisions were tacked onto the regular draft law. Although vigorous protests were made by us and by many of our friends in Congress, we were only able to accomplish two things: one, the age for induction of physicians was reduced from 51 to 46; and, two, any physician 35 years or older who was or is rejected for a commission in the Medical Corps solely for a physical disqualification became no longer liable under the act. I know for many reasons that there are no more patriotic citizens than the physicians. They object, and I think rightfully so, against this discriminatory legislation in times of so-called peace. War times are different, but we do have the doctor draft extended for two more years whether we like it or not, and the tragedy is that it may again be extended when the present two year period is over. In fact, a doctor draft could become a permanent thing come war or peace. This to me is an alarming situation that the Association must actively combat.

I have questioned many of my friends in the regular medical services, and I had one man high in the regular Medical Corps tell me without any reservations that there would be no Medical Corps in a few years the way things were going at the present time. A big part of the answer to this unusual and rather startling situation is just plain ordinary economics. This particular gentleman pointed out to me that the men who should be the backbone of the regular corps were retiring as soon as they could from the services to go into private practice just when their services were of the utmost value to the government because of their experience and training. The economic situation is so bad at present that it is impossible to recruit good young physicians for the permanent services. The career men in the Army are having a hard time financially, and it is difficult to blame a young man after he serves his time for not applying for a regular commission when he sees what is happening. This is particularly true when he sees the colonels retiring as fast as possible to accept much better paying positions in civilian life.

When I was a youngster it was a very desirable thing for a man to make a career in the armed forces medical services. Competitive examinations were the rule, and the men were very carefully selected. These are the men today who have so splendidly managed the terrific medical problems that have faced our armed forces during the past two decades. In the early days the salaries with the added benefits were somewhat comparable to the rewards of civilian practice. There were of course the added adventure, the educational facilities, and the social advantages. Today the salaries are not comparable with the income in the private practice of medicine nor in the medical positions in schools, clinics, and industry that are available to the older men who are eligible for retirement. The Department of Defense recently set up a task force to study the problem and make recommendations. The American Medical Association is, I know, perfectly willing to help in this task, but the sad state of affairs remains, and changes are neither quickly nor adequately accomplished.

We are the richest country in the world. We spend large sums of money abroad and we spend it at home on all sorts of welfare programs, but we treat all of our armed forces career people abominably. These men are the most important part of our national defense. Their salaries should be proportionate to the magnificent services they render. Their economic position should be such that they can live reasonably well and educate their children without undue worry. Taking into consideration their retirement pay and the benefits that are their right, their salaries should immediately be upped and they should receive somewhere near that which they could earn as civilians with equal duties and responsibilities. This in my book goes for all commissioned personnel in all departments of the armed forces but more particularly to the career medical men.

Unless this is done and done at once I can easily understand my Army friend's statement that in a few years there will be no career Medical Corps. What then? The men and women in the services have to be given preventative and curative medical care. Where will we get the doctors to do this? There is only one answer—the doctor draft. What can we do about it? We can assist the Department of Defense to restudy the whole problem and come up with recommendations. To whom? Congress. What else can we do? We can approve the recommendations when they are economically sound, and we can be of great service to our country by telling our representatives in Congress that this type of legislation is a must. It is one of two things; which do you want—an economically sound career Medical Corps or the doctor draft? Make no mistake—it is one or the other.

ELMER HESS, M.D.
Erie, Pa.

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ORGANIZATION SECTION

STUDY CONFERENCE ON LEGISLATION

A study conference called by the American Medical Association to consider methods of informing its membership of certain aspects of pending legislation was held in Chicago, Oct. 22. More than 100 representatives of constituent state medical associations, A. M. A. officers, and members of the Board of Trustees participated in discussions and considered approaches for focusing the public's attention upon the A. M. A.'s viewpoint. H. R. 7225, known as the Social Security Amendments of 1955, includes provision for the payment of monthly cash benefits to the permanently and totally disabled at age 50. The bill, passed by the House of Representatives last summer, will come before the Senate Finance Committee for public hearings early in the next session of Congress.

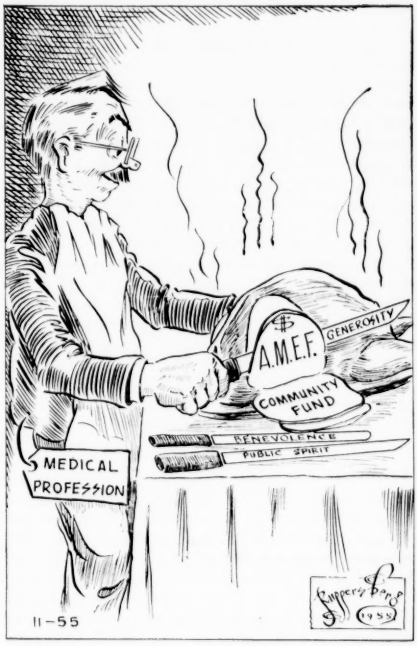
Comments of participants were solicited at the Chicago meeting, and A. M. A. officers and trustees are currently studying these opinions. Dr. George F. Lull, A. M. A. Secretary and General Manager, urged that all medical society representatives who attended the conference send further comments, suggestions, or criticisms to A. M. A. headquarters. He pointed out that the Association is studying the consensus of the state representatives who attended the conference and will proceed in a manner consistent with the views of the majority.

Giving the official address of welcome at the conference, Dr. Gunnar Gundersen, chairman of the Board of Trustees, said: "Our great aim should be to join with other groups and organizations, with the press and other communications media and with responsible leaders of both political parties to separate Social Security and politics. The A. M. A. believes that problems of Social Security should be solved on the basis of sound judgment, an objective analysis of facts, a humane attitude toward human suffering—and not on the basis of political expediency."

Dr. Elmer Hess, A. M. A. President, emphasized that the program to promote a better social security system must be considered a "long range effort," looking forward to 1958, 1960, even to 1962. He also stressed that study of social security legislation will require close cooperation and mutual activity at the national and local levels.

THE BOSTON MEETING

The School of Medicine Alumni Association of Boston University will hold an informal reunion at the Sherry-Biltmore Hotel in Boston Tuesday evening, Nov. 29. Dinner is scheduled for 7 p. m., with a social hour starting at 6 p. m. Tickets are $5 each, and wives and friends are invited.



"How're ya fixed for blades?" (Reprinted from the *Bulletin of the Columbus* (Ohio) *Academy of Medicine.*)

FEDERAL MEDICAL LEGISLATION

First Session, 84th Congress

Agency for the Handicapped

Congressman Diggs (D., Mich.), in H. R. 7207, and Congressman Staggers (D., W. Va.), in H. R. 7465, would establish a federal agency for the handicapped in the United States Department of Labor. To this would be transferred the Office of Vocational Rehabilitation from the Department of Health, Education, and Welfare, together with other governmental functions having to do with the handicapped. This measure, identical with numerous other measures previously reported, was referred to the Committee on Education and Labor.

Prepared by the Washington Office of the American Medical Association.

COUNCIL ON NATIONAL DEFENSE

RESULTS OF SURVEY OF PHYSICIANS SEPARATED FROM ACTIVE MILITARY SERVICE

The Council on National Defense, in July, 1952, initiated a continuing opinion survey of physicians released from active military service. Through an agreement with the military services, the Council is currently being furnished the names and addresses of these physicians. In turn, the Council requests these physicians to complete a questionnaire primarily designed to obtain pertinent information acquired during their tour of duty concerning the utilization of physicians and medical staffing conditions in the services. The results of these surveys are used as the basis of conferences with representatives of the Department of Defense and the armed forces, since the questionnaire also calls for comments and suggestions of ways to further improve the medical corps as well as ways and means whereby organized medicine can be of greater assistance to military physicians. This report covers the period from July 1, 1954, to Dec. 31, 1954, during which time a total of 2,373 questionnaires was distributed. Of these, 1,500 completed forms were returned to the Council, representing a 63% response.

AGE DISTRIBUTION BY BRANCH OF SERVICE

Of 1,500 physicians replying, 783 men were between the ages of 30 and 34 years; 465 between 25 and 29 years; 200 between 35 and 39 years; and 52 were over 40 years of age. The largest number of physicians (639) were in the Navy, and 512 and 348 were in the Army and Air Force respectively. The Army had the largest number in the 30-34 age group and the 40-and-over age group. Of those in the 25-29 age group, 225 were in the Navy and 134 in the Army.

PHYSICIANS' EVALUATION OF STAFFING CONDITIONS

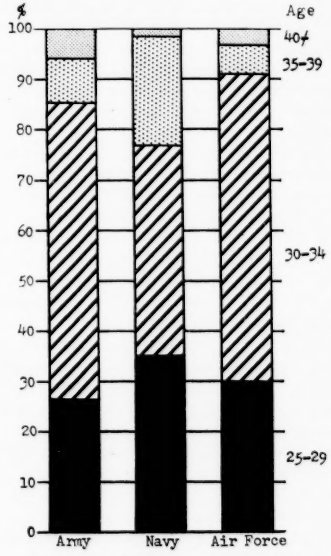
One of the questions was designed to obtain the opinion of physicians as to staffing conditions of nurses, enlisted medical personnel, physicians, dentists, and others at those units in which service was performed by the physician. The tabulation of this multiple-answer question indicated that in the Army replies of overstaffing totaled 389, understaffing 434, and adequate staffing 1,136. In the Navy, overstaffing was shown at 570, understaffing at 466, and adequate staffing at 1,334. The Air Force tabulation revealed 284 replies of overstaffing, 413 of understaffing, and 684 of adequate staffing. Table 1 reflects, in detail, the percentages relative to overstaffing, understaffing, and adequate staffing conditions.

DISTRIBUTION OF PHYSICIANS BY RANK AT TIME OF DISCHARGE

The majority of physicians in all three branches of the service, at time of separation, held the rank of first lieutenant or lieutenant junior grade. The survey indicates that 51.1% of those who reported were in the lowest rank, while 45.4% held the rank of captain or lieutenant senior grade. There were only 3.5% with higher ranks. By services, the Air Force had 10.1% at the first lieutenant rank and 88.2% at the captaincy level. The Navy had the highest percentage in the lowest rank, with 85.6% at the lieutenant junior grade level. Table 2 reflects, by branch of service, these percentages.

NUMBER OF YEARS SINCE GRADUATION

The survey indicated that about half of those replying (764, or 50.9%) were graduated from medical school between the years 1945 and 1949; the second largest group, 416, or 27.7%, were graduated in 1950 or later; and the third group in order, 298, or 19.8%, were graduated between 1940 and 1944. Only a small number, 15, or 1.0%, were graduated before 1940. Six failed to answer the questions (table 3).



Age distribution of physicians by branch of service.

YEARS OF INTERNSHIP AND RESIDENCY

By far, the majority of those responding, 1,331, or 88.8%, had one year of internship training, while 350, or 23.3%, had three years of residency; 260, or 17.3%, had one year of residency; 244, or 16.3%, had two years of residency; and 334, or 22.3%, had no residency training. Table 4 shows this tabulation in more detail.

OCCUPATION AT TIME OF ENTERING SERVICE

A majority of the physicians who served in the Army, Navy, and Air Force were engaged in residency training at the time of entrance into active military duty. The largest group in the naval service was engaged in residency training, with specialty practice second. In the Army group, specialty practice was second, while, in the Air Force, internship and general practice tied for second, with specialty practice a very close third (table 5).

NUMBER OF PHYSICIANS HOLDING BOARD CERTIFICATES BY FIELD OF SPECIALIZATION

Table 6 shows the detailed numbers, by specialty and by branch of service, of physicians holding board certificates. Of the 270 persons responding to this question, 87 holding board certificates were in the Army, 139 were in the Navy, and 44 were in the Air Force. The specialties covered over 18 different fields, of which the largest was surgery, the second largest was pediatrics, and the third largest internal medicine. By branch of service, a total of 17.0% of those responding in the Army, 21.8% of those in the Navy, and 12.6% of those in the Air Force had certificates. For the three services, 18.0% of those responding had board certificates.

RESERVE STATUS

Most of the physicians who replied indicated that they still had their reserve commission. The percentage who retained their commission was higher in the Navy, with the Army second and Air Force last. These percentages are reflected in table 7.

TABLE 4.—*Percentage Distribution of Total Physicians by Years of Internship and Residency*

Yr.	Internship, %	Residency, %
None	0.3	22.3
1	88.8	17.3
2	10.5	16.3
3	0.1	23.3
4	0.0	10.6
Other	0.3	10.2
Total	100.0	100.0

TABLE 5.—*Percentage Distribution of Physicians According to Type of Practice at Time of Entering Military Service*

	Army, %	Navy, %	Air Force, %
Internship	12.3	11.7	15.5
Residency	32.8	31.6	40.8
Specialty practice	19.3	28.3	15.2
General practice	15.8	19.5	15.5
Industrial practice	0.8	0.0	0.6
Other	19.0	8.5	12.1
No response	0.0	0.0	0.3
Total	100.0	100.0	100.0

TABLE 1.—*Medical Staffing Conditions in the Armed Forces*

	Overstaffed, %			Understaffed, %			Adequate, %		
	Army	Navy	Air Force	Army	Navy	Air Force	Army	Navy	Air Force
Nurses	6.2	11.7	13.4	38.0	27.5	31.7	23.1	27.0	23.0
Enlisted medical personnel	22.4	26.0	22.5	22.6	19.9	21.3	26.0	26.8	26.3
Physicians	38.0	45.8	27.1	18.4	18.7	35.4	22.5	19.3	21.6
Dentists	24.2	10.9	27.5	14.5	28.1	14.6	24.6	24.1	25.1
Others	9.2	5.6	9.5	6.5	5.8	7.0	3.8	2.8	4.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

GOVERNMENT MEDICAL EDUCATION RECEIVED

Of the 1,499 physicians in the Army, Navy, and Air Force who completed the questionnaire, a total of 1,033 stated that they had received assistance in their medical education from the government. There were 466 who said they had received no government assistance. The largest single group receiving government assistance was under the Navy V-12 Program, while the next largest number received assistance under the Army Specialized Training Program. The GI Program accounted for the third largest group, while several listed a combination of various programs. Table 8 shows percentages in detail.

TABLE 2.—*Distribution of Physicians by Rank at Time of Discharge*

	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
1st lieut.—lieut. j.g	184	35.9	547	85.6	35	10.1
Capt.—lieut. s.g	312	60.9	61	9.5	307	88.2
Major—lieut. commander	10	2.0	26	4.1	4	1.1
Lieut. col.—commander	4	0.8	2	0.3	0	0.0
Col.—capt.	2	0.4	3	0.5	0	0.0
No answer	0	0.0	0	0.0	2	0.6
Total	512	100.0	639	100.0	348	100.0

TABLE 3.—*Number and Percentage Distribution of Physicians Graduated from Medical Schools in Selected Intervals*

Graduation, Yr.	No.	%
Before 1940	15	1.0
1940-1944	298	19.8
1945-1949	764	50.9
1950 and over	416	27.7
Unknown	6	0.4
Total	1,500	100.0

TRAINING RECEIVED WHILE IN SERVICE

Of the 1,500 who returned a completed questionnaire, approximately one-third did not respond to the question concerning the additional training or experience received while in the military service. Of those responding, 412 who served in the Army, 276 in the Navy, and 251 in the Air Force indicated they received additional training or experience in service schools. The Medical Field Service School accounted for the largest number, while the School of Aviation Medicine and the Amphibious Forces Training School were next in order of size. Table 9 indicates the number and percentage distribution of physicians by type of training received and by branch of service.

PHYSICIANS' EVALUATION OF MEDICAL MILITARY TRAINING

The great majority of the physicians filling out the questionnaire felt that all important features of medical military training had been satisfactorily covered. A small percentage indicated the training was unsatisfactory but gave no specific reasons. Others stated reasons why they considered their tour of service unsatisfactory. It should be pointed out that this was a multiple-answer question. According to services, the response from the Army was 469, from the Navy 513, and from the Air Force 317. Table 10 indicates percentages by branch of service.

PHYSICIANS' EVALUATION OF ASSIGNMENT

A large majority of the physicians indicated that they were properly assigned; however, a less decisive majority in the Army and Air Force responded favorably to the question as to whether they were properly rotated.

TABLE 6.—*Number of Physicians Holding Board Certificates by Field of Specialization*

	Army	Navy	Air Force
Pediatrics	14	16	11
Psychiatry and neurology	6	16	4
Orthopedic surgery	2	4	2
Dermatology and syphilology	2	3	1
Radiology	5	6	4
Urology	0	4	0
Obstetrics and gynecology	2	9	2
Internal medicine	13	23	4
Pathology	6	2	1
Ophthalmology	5	11	3
Otolaryngology	4	3	1
Surgery	16	32	8
Anesthesiology	2	4	1
Physical medicine and rehabilitation	0	1	0
Plastic surgery	1	1	0
Neurological surgery	0	0	1
Preventive medicine and public health	1	1	0
Thoracic surgery	1	1	0
Certificate not specified	7	2	1
Total	87	139	44

TABLE 7.—*Percentage Distribution of Physicians According to Reserve Status*

	Army, %	Navy, %	Air Force, %
Retained commission	47.7	78.4	36.8
Dropped commission	51.9	20.2	62.6
No response	0.4	1.4	0.6
Total	100.0	100.0	100.0

TABLE 8.—*Percentage Distribution of Physicians by Type of Governmental Medical Education Received*

	Army, %	Navy, %	Air Force, %
Army Specialized Training Program	23.6	10.0	20.7
Navy V-12	12.5	62.6	21.9
GI Bill	11.7	5.5	8.9
Navy V-12 and GI	10.4	1.0	10.9
Other	0.8	0.6	1.4
	59.0	79.7	63.8
No assistance	41.0	20.3	36.2
Total	100.0	100.0	100.0

A more decisive majority in the Navy, however, responded favorably to the question as to whether they were properly rotated. Tables 11 and 12 show these percentages by branch of service.

TYPES OF PATIENTS TREATED

One of the questions was designed to determine the percentage of time devoted by physicians to military personnel, dependents of military personnel, and administrative duties, both at domestic and overseas stations. Many of the respondents neglected to answer the question, and still others answered it only in part. Tables 13 and 14 reveal these percentages in detail.

TYPES OF NONMILITARY MEDICAL CARE PROVIDED

The type of medical care most frequently performed by medical officers for nonmilitary persons was outpatient care. For the Army, "other specialty services" was second in order of frequency, with surgery the third in order. For the Navy and Air Force, obstetrics and gynecology was second in order of frequency, with "other specialty services" the third in order for the Navy and pediatrics the third for the Air Force. Table 15 shows the percentage and types of care.

TABLE 9.—*Number and Percentage Distribution of Physicians by Type of Governmental Medical Training Received*

	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
Basic course, Medical Field Service School	309	54.9	12	1.7	41	11.1
Marine Medical Officers Training	0	0.0	45	6.4	0	0.0
Advanced course, Medical Field Service School	11	2.0	1	0.1	1	0.3
Marine Field Service Training	1	0.2	44	6.2	0	0.0
School of Aviation Medicine	2	0.3	30	4.3	128	34.8
Amphibious Forces Training School	2	0.3	52	7.4	0	0.0
Other schools	138	24.5	158	22.4	101	27.4
No response	100	17.8	363	51.5	97	26.4
Total	563	100.0	705	100.0	368	100.0

TABLE 10.—*Physicians' Evaluation of Military Medical Training*

	Army, %	Navy, %	Air Force, %
Satisfactory	77.0	70.6	83.6
Unsatisfactory	23.0	29.4	16.4
Unsatisfactory and insufficient training in			
Military customs, administration, and regulations	17.6	13.9	23.1
Base orientation and indoctrination	9.3	38.4	26.9
Military medicine	13.0	8.0	3.9
Field duty	12.0	3.3	1.9
Miscellaneous	48.1	36.4	44.2
	100.0	100.0	100.0
Total	100.0	100.0	100.0

TABLE 11.—*Physicians' Evaluation of Assignment*

	Army, %	Navy, %	Air Force, %
Properly assigned	77.1	66.7	82.7
Not properly assigned	22.1	32.4	16.7
No response	0.8	0.9	0.6
Total	100.0	100.0	100.0

TABLE 12.—*Physicians' Satisfaction with Assignment*

	Army, %	Navy, %	Air Force, %
Satisfied	73.6	68.4	77.3
Not satisfied	25.6	30.3	21.3
No response	0.8	1.3	1.4
Total	100.0	100.0	100.0

DUTIES THAT COULD HAVE BEEN PERFORMED ADEQUATELY BY OTHER PERSONNEL

A total of 1,380 physicians answered the question pertaining to duties that could have been performed by other personnel; 120 physicians did not reply of this number, or 46.1%, stated that their duties could not have been performed adequately by other personnel,

while 744, or 53.9%, felt their duties could have been performed by other personnel. The 744 physicians who responded to this multiple-answer question in the affirmative gave detailed information as shown in table 16.

PHYSICIANS WHO WOULD VOLUNTARILY REMAIN IN SERVICE

In response to the question relative to military service beyond the obligated tour of duty, 373 physicians indicated they would not be willing to stay in military service for more than their two years of service under any circumstances. A total of 816 physicians indicated they would serve an additional period under certain conditions. There were 311 who failed to reply to the question. Table 17 reflects the reasons or conditions under which an additional period of service would be acceptable.

TABLE 13.—*Percentage of Time Spent in Treating Military Personnel, Dependents of Military Personnel, and Others*

Percentage of Time	Under 20%	20-50%	50% and Over
Military personnel			
Domestic	20.6	28.6	50.8
Overseas	22.6	29.9	47.5
Dependents of military personnel			
Domestic	34.9	36.9	28.2
Overseas	43.8	21.5	34.7
Administrative duties			
Domestic	63.9	21.0	15.1
Overseas	54.9	31.3	13.8
Idle			
Domestic	50.0	17.2	32.8
Overseas	37.0	23.9	39.1
Other			
Domestic	42.9	16.2	40.9
Overseas	56.0	15.2	28.8

TABLE 14.—*Breakdown of Time Allotted to Military Personnel and Their Dependents*

Percentage of Time	Military Personnel		Dependents	
	Domestic	Overseas	Domestic	Overseas
0-19	20.6	22.6	34.9	43.8
20-49	28.6	29.9	36.9	21.5
50 and over	50.8	47.5	28.2	34.7
Total	100.0	100.0	100.0	100.0

TABLE 15.—*Distribution of Physicians by Type of Nonmilitary Medical Assignments*

	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
General medical and hospital care	90	11.7	81	8.5	75	13.2
Obstetrics and gynecology	91	11.9	142	14.9	87	15.3
Pediatrics	71	9.2	117	12.3	75	13.2
Outpatient care	203	26.4	270	28.4	169	29.6
Other specialty services	105	13.7	118	12.4	71	12.5
Surgery	97	12.6	69	7.3	55	9.6
Contagious diseases	1	0.1	3	0.3	0	0.0
Miscellaneous	6	0.8	9	1.0	2	0.3
Assignment not specified	44	5.7	61	6.4	17	3.0
No response	61	7.9	81	8.5	19	3.3
Total	769	100.0	951	100.0	570	100.0

SUGGESTIONS FOR IMPROVEMENT OF SERVICE GIVEN BY MEDICAL ASSOCIATIONS TO MILITARY PHYSICIANS

A total of 720, or 48.0%, responded to the question concerning the role of national and local medical associations in maintaining closer contact or rendering better service to their members who served as physicians in the armed forces. Of these, 347 had no suggestions. The suggestions of the remaining 373 physicians are tabulated in table 18.

TABLE 16.—*Physicians Indicating Possible Transfer of Duties to Other Personnel*

Possible Transfer To:	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
Nurses	15	2.8	19	2.8	8	2.2
Enlisted personnel	12	2.3	31	4.6	9	2.5
Civilian medical personnel	160	30.2	273	40.4	151	41.9
Personnel not specified	303	57.2	282	41.8	154	42.8
Combinations of health personnel other than physicians	40	7.5	70	10.4	38	10.6
Total	530	100.0	675	100.0	360	100.0

TABLE 17.—*Distribution of Physicians Indicating Conditions of Voluntary Extension of Service Beyond Two Year Requirement*

Conditions	Army		Navy		Air Force	
	No.	%	No.	%	No.	%
Total war	175	31.9	213	34.0	113	30.9
All doctors serving on an equitable basis	2	0.4	5	0.8	1	0.3
Promotion to higher rank	32	5.8	30	4.8	23	6.3
Increase in pay	35	6.4	36	5.7	34	9.3
Given residency or further training	49	8.9	47	7.5	29	7.9
Opportunity to practice specialty	30	5.5	48	7.6	24	6.6
Choice of duty assignment (hospital duty)	55	10.0	53	8.4	18	4.9
Choice of stable location	15	2.7	38	6.1	32	8.7
Living quarters for family	15	2.7	13	2.1	6	1.6
Request for extension at status quo approved	0	0.0	1	0.2	1	0.3
Extended service time voluntary	28	5.1	22	3.5	14	3.8
Miscellaneous conditions	113	20.6	121	19.3	71	19.4
Total	549	100.0	627	100.0	366	100.0

TABLE 18.—*Suggestions for Improvement of Service Given by Medical Associations to Military Physicians*

Suggested Society Activities	Army	Navy	Air Force
More information, newsletters	49	42	30
Personal visits by civilian physicians to evaluate grievances	50	53	43
Invitation of military physicians to civilian medical meetings	30	31	32
Assistance in locating a position after discharge	14	10	5
Assistance in preventing evasion of military service	16	30	13
Distribution of questionnaires to physicians in service	26	30	17
Provision of specialists for clinical conferences	6	5	2
Miscellaneous suggestions	122	162	75
Total	313	363	217

The Council on National Defense will publish the results of this continuing survey as a special report in THE JOURNAL every six months. Reprints or additional data may be obtained from the Council on National Defense, 535 N. Dearborn St., Chicago 10.

MEDICAL NEWS

CALIFORNIA

Course in Electrocardiography.—The University of California Extension will offer a course in electrocardiography, Wednesdays and Fridays, 7:30-9:30 p. m., from Nov. 30 to Dec. 16 in room 2276 of the Chemistry-Geology Building on the U. C. L. A. campus. The course will stress primarily the features of unipolar electrocardiography and will consist of lectures with lantern slides. Instructor will be Dr. Morley J. Kert, assistant clinical professor of medicine at U. C. L. A. Fee for the course is $20. Request for information should be made to Dr. Thomas H. Sternberg, Assistant Dean for Postgraduate Medical Education, University of California Medical Center, Los Angeles 24.

Society News.—Officers for 1955 of the Los Angeles Obstetrical and Gynecological Society include Dr. Samuel M. Martins, Los Angeles, president; Dr. Ralph H. Walker, North Hollywood, vice-president; and Dr. Walter C. Rogers, Pasadena, secretary-treasurer.——New officers of the Allergy Foundation of Northern California include: Dr. M. Coleman Harris, San Francisco, chairman of the board of governors; Dr. Grace M. Talbott, San Francisco, vice-chairman; and Dr. Albert P. Rowe Jr., Oakland, secretary-treasurer.——The Los Angeles Radiological Society recently elected Dr. George F. Jacobson, Los Angeles, president; Dr. Hubert J. Prichard, Long Beach, vice-president; Dr. Samuel C. Kahlstrom, Los Angeles, treasurer; and Dr. Richard A. Kredel, Pasadena, secretary.

Dr. Bullock Honored.—Dr. Lewis T. Bullock, chairman, research committee, Los Angeles County Heart Association, and an associate clinical professor of medicine, University of Southern California School of Medicine, Los Angeles, was presented recently with a framed scroll bearing more than 100 signatures at a testimonial dinner. The award cited Dr. Bullock's "service on behalf of mankind and selfless efforts in developing the program of research which has made this area one of the leading centers of cardiovascular research." Dr. Paul Starr, head, department of medicine in the University of Southern California School of Medicine, presented the scroll, and Dr. Albert A. Kattus, associate professor of medicine, University of California at Los Angeles School of Medicine, was master of ceremonies. Among the speakers were Drs. Walter E. MacPherson, Gordon E. Goodhart, Stafford L. Warren, Myron S. Prinzmetal, and John S. Lawrence.

CONNECTICUT

Guest Speakers at Hospital.—In its guest speaker program, Saturdays, 11 a. m., the Hartford Hospital presents Dr. Howard A. Rusk, professor of physical medicine and rehabilitation, New York University College of Medicine, and medical consultant to the Rehabilitation Division of the Veterans Administration and the United Nations, who will discuss the dynamic approach to chronic disease Dec. 3; and Dr. Averill A. Liebow, professor of pathology, Yale University School of Medicine, New Haven, who will conduct a clinical pathological conference Dec. 10.

ILLINOIS

Hospital Chosen for Hemoglobin Study.—The Highland Park Hospital has been chosen as one of 125 hospitals in the United States, Canada, and England to participate in research on standardizing tests for hemoglobin.

Cardiologists Meet in Springfield.—Scientific sessions on cardiovascular diseases will be conducted by the Illinois Heart Association in cooperation with the Illinois Department of Public Health and the Sangamon County Medical Society, Dec. 1, at the Hotel St. Nicholas, Springfield. Dr. Arnold S. Moe, East St. Louis, will be chairman of the afternoon session, at which the following guest presentations will be made:

Cardiac Surgery, William S. Dye Jr., Chicago.
Diagnosis and Management of Rheumatic Fever, Bernard A. Schwartz, Cincinnati.
Coronary Heart Disease, Paul S. Barker, Ann Arbor, Mich.
Instrumental Diagnosis of Heart Disease, E. Grey Dimond, Kansas City, Kan.

At 4:15 p. m. the guest speakers will participate in a panel discussion moderated by Dr. Edward W. Cannady, East St. Louis. A social hour, 5:30 p. m., will precede the dinner session, at which Dr. Stanley L. Levin, Danville, president, Illinois Heart Association, will serve as chairman and will deliver an address, "Your Heart Association in Action." Greetings will be extended by Dr. David J. Lewis, Springfield, president, Sangamon County Medical Society. Dr. Kenneth G. Kohlstaedt, Indianapolis, the featured speaker, will have as his topic "Management of Hypertension."

Chicago

Dr. James Miller Goes to Michigan.—Dr. James G. Miller has been appointed professor of psychiatry and head of the new Mental Health Research Institute, University of Michigan Medical School, Ann Arbor. Dr. Miller has been chairman of the department of psychology and of the committee on behavioral sciences at the University of Chicago since 1951.

Society News.—Newly elected officers of the Chicago Council of Child Psychiatry include: Dr. Irene M. Josselyn, president; Dr. Adrian H. Vander Veer, president-elect; and Dr. Harry M. Segenreich, secretary-treasurer.——The Dr. Jerome D. Solomon Memorial Research Foundation will present "A Night for a King" at the Conrad Hilton Hotel, Dec. 10, 8 p. m. Reservations ($15 per couple, including dancing, entertainment, and midnight supper) may be made through the reservation chairman, Mrs. David Berke, 3172 N. Sheridan Road, Chicago 14. Irv Kupcinet, Sun-Times columnist, will serve as master of ceremonies.

Death of Carl Moore.—Carl R. Moore, Ph.D., an authority on the biology of sex and chairman of the University of Chicago department of zoology, died Oct. 16 in Albert Merritt Billings Hospital. Dr. Moore, who began his studies before sex hormones were isolated, contributed to their isolation. His work on the effect of hormones aided in the development of treatment for prostate cancer in men and breast cancer in women. In 1950 he received the fifth scientific award of the American Urological Association and last June was awarded a medal by the Endocrine Society in recognition of his distinguished contributions to endocrinology. Dr. Moore had been a member of the faculty of the University of Chicago since 1914.

Dr. Hellebrandt Retires.—Dr. Frances A. Hellebrandt retired Sept. 1 as head, department of physical medicine and rehabilitation, University of Illinois College of Medicine. She will live in Athens, Ohio, where she will devote full time to historical research and scientific writing. Dr. Hellebrandt came to the university in 1951 as a department head. She previously directed the Baruch Center of Physical Medicine at the Medical College of Virginia, Richmond, and was head of the section on physical medicine and associate professor of physiology, University of Wisconsin Medical School, Madison. Succeeding Dr. Hellebrandt as department head is Dr. David I. Abramson, a staff member of the department of medicine since 1946.

Conference on Retirement.—A conference on general retirement problems of industry will be held Nov. 30, 9 a. m.-4 p. m., in the Sherman Hotel under the joint sponsorship of the Chicago Heart Association and the Chicago Association of Commerce and Industry. In the morning the theme will be "Postponing Premature Retirement"; in the afternoon, "Approaches to Retirement." At luncheon Dr. Irving S. Wright,

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

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past-president of the American Heart Association and professor of clinical medicine, Cornell University Medical College, New York, will discuss "Chronological Age vs. Biological Age as a Basis for Retirement." The other luncheon speaker will be Meyer Kestnbaum, M.B.A., Chicago, president of Hart, Schaffner & Marx. Luncheon reservations ($3, including tip) may be made through the headquarters of the Chicago Heart Association, 69 W. Washington St., Chicago 2, telephone: FInancial 6-4675.

KANSAS

Refresher Course in Surgery.—The University of Kansas School of Medicine will present its 11th annual postgraduate refresher course in surgery (fee, $60) Jan. 16-19, 1956, at the Kansas University Medical Center in Kansas City. The program will include operative clinics with color television, cine clinics, ward walks, basic sciences in surgery, and surgical treatment of injury and cancer. Program announcements and registration cards can be obtained from the Department of Postgraduate Medical Education, University of Kansas Medical Center, Kansas City 12.

Student Loan Fund.—The Kansas Medical Society has announced the creation of the John M. Porter Memorial Student Loan Fund for junior and senior students at the University of Kansas School of Medicine. Dr. Porter died Sept. 5 during his term of office as president of the society. Contributions may be sent to the society office, 315 W. Fourth St., Topeka, with checks made payable to Porter Memorial. Those who wish to claim tax exemption for their gifts to the fund may make checks payable to American Medical Education Foundation (535 N. Dearborn St., Chicago 10) with an accompanying note stating that the amount is intended for the John M. Porter Memorial Student Loan Fund at the University of Kansas School of Medicine.

MAINE

Postgraduate Course in Anesthesiology.—Physicians are welcome to attend the postgraduate educational program in anesthesiology offered by the Maine General Hospital, Portland, in the house officers' quarters from 4 to 5 p. m. on the first and third Fridays of each month. On Dec. 2 the lecture will deal with barbiturate poisoning and on Dec. 16 with spinal anesthesia.

MASSACHUSETTS

New England Diabetes Association.—A meeting of the New England Diabetes Association will be held Nov. 28 at 8 p. m. in the Joslin Auditorium of the New England Deaconess Hospital, Boston. Dr. Laurance W. Kinsell, medical director, Alameda County Hospital, Institute for Metabolic Research, Oakland, Calif., will discuss "Hypophysectomy in Juvenile Diabetes with Progressive Vascular Disease." There will also be speakers on surgical and endocrine aspects of this problem.

MICHIGAN

Society News.—The Michigan regional meeting of the American College of Physicians will be held at the Sheraton-Cadillac Hotel in Detroit, Dec. 3. There will be a banquet in the evening. Members of the medical profession are invited, and residents and interns are especially welcome.

Ballim Lecture.—Dr. Irving S. Wright, professor of clinical medicine, Cornell University Medical College, New York, will deliver the annual Max Ballim Memorial Lecture at a dinner sponsored by Sinai Hospital, Dec. 1, at the Sheraton-Cadillac Hotel, Detroit, where he will speak on peripheral vascular disease.

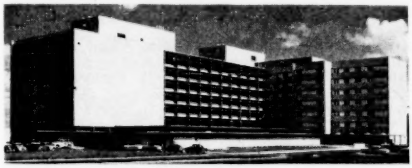
Hearing Research Project.—Wayne University College of Medicine, Detroit, announces a research project involving study of the ears of 60 vertebrate and invertebrate animals to increase understanding of the human ear and its diseases. The study, directed by Dr. Heinrich F. G. Kobrak, professor of otolaryngological research, is being financed by the Beltone Institute for Hearing Research. The study will include the ear of a whale and the hearing mechanism of a cockroach, as well as those of fish, reptiles, Amphibia, birds, and mammals.

MISSISSIPPI

Society News.—The Mississippi Academy of General Practice recently installed Dr. William E. Lotterhos, Jackson, as president and named Dr. Aubrey V. Beacham, Magnolia, president-elect; Dr. Amon K. McMillan, Lucedale, vice-president; and Dr. Robert M. Seawright, Bolton, secretary-treasurer.

Personal.—Dr. James D. Hardy, professor of surgery and director of surgical research, University of Mississippi Medical Center, Jackson, presented "Fluid Therapy in Burns" and "Potassium Metabolism and Therapy" at a postgraduate course on fluid and electrolyte balance at the University of Colorado School of Medicine, Denver, Nov. 10-12.

University Medical Center.—Constructed at a cost of nine million dollars, the University of Mississippi Medical Center, Jackson, was dedicated Oct. 24. The center houses, in one seven-story plant, a teaching hospital, outpatient clinic, research facilities, library, school of nursing, and the school of medicine. It was begun in 1950, when the state legislature appropriated funds, later augmented by Hill-Burton and Hinds County money. Faculty and physical equipment have been transferred from the two-year medical school at the University of Mississippi in Oxford to the new center. The two wings of the 350-bed teaching hospital, activated July 1, form the crossbar of the T-shaped building with the medical school, extending midcentrally from the hospital section, forming the stem. Floor space is slightly over 10 acres.



Medical Center in Jackson.

MISSOURI

Dr. Lowry Appointed Dean.—Dr. Oliver H. Lowry, head of the department of pharmacology, Washington University School of Medicine, St. Louis, has been named dean to succeed Dr. Carl V. Moore, who resigned to devote full time to research and teaching.

Hospital News.—The new $1,580,000 Renard Hospital, the psychiatric unit of Washington University-Barnes Medical Center, St. Louis, was dedicated Oct. 10 at the medical center. Construction of the new seven-story, 100-bed hospital was begun in 1952 with the aid of Hill-Burton funds.

Personal.—Dr. Daniel L. Sexton, associate professor of medicine, St. Louis University School of Medicine, is the recipient of the 1955 Distinguished Service award given by the Mississippi Valley Medical Society to a member "who has rendered unusual and distinguished service to the medical profession." Dr. Sexton is president of the St. Louis Medical Society.

Society News.—At 8:30 p. m. Nov. 29, the St. Louis Medical Society will present a panel, "Modern Management of Pulmonary Tuberculosis," with Dr. Paul Murphy as moderator and Dr. Alfred Goldman and Dr. Thomas H. Burford (by invitation) as participants. On Dec. 20, 8:30 p. m., "Simple Mastectomy and Irradiation Therapy in the Treatment of Cancer of the Breast—An Evaluation of Dr. McWhirter's Method Based on Personal Study of His Cases" will be the topic of Dr. Lauren V. Ackerman, professor of surgical pathology, Washington University School of Medicine, St. Louis.

NEW YORK

Albert Research Institute.—The Isaac Albert Research Institute, named in honor of the president of the Jewish Chronic Disease Hospital at Brooklyn, has been established at the hospital to promote the development of research laboratories and improve the facilities for studies in the field of chronic diseases.

Part-Time Physicians Needed in Chest Clinics.—The health department plans to open new chest clinics in the Bronx and in Brooklyn. Applications for part-time positions may be obtained by writing to the Bureau of Tuberculosis, 125 Worth St., New York 13. Pay for a three-hour session is $15.

Brooklyn Doctors' Symphony Orchestra.—Physicians, dentists, and others engaged in allied professions are invited to become members of the Brooklyn Doctors' Symphony Orchestra, of which Dr. Jacob Leffert is president. Rehearsals are held every Wednesday at 8:30 p. m. in the auditorium of the Brooklyn High School for Home Making, 901 Classon Ave. For details call Miss Ethel Leitman, secretary of the orchestra, at SLocum 6-2252.

Hospital News.—Sister Mary Aquinas, superintendent of St. James Mercy Hospital, Hornell, was recently honored by Hornell and area residents on the occasion of her golden jubilee. Honored with her was Sister May de Sales, who came to the hospital 55 years ago. Sister Aquinas supervised the maternity department for 29 years, rose to be administrator, and during her administration added the hospital's million dollar wing. The 35-bed hospital of 1905 is now a modern 152-bed hospital.

University News.—Albany Medical College, Albany, announces the following promotions in the department of psychiatry: from assistant professor to associate professor, Dr. Frederick D. McCandless; from instructor to assistant professor, Dr. John D. LaTendresse; from assistant to instructor, Dr. Janis L. Best.——Dr. Stanley M. Ball, assistant neurologist at the Neurological Institute of the Columbia-Presbyterian Medical Center, New York City, has been appointed neurology instructor at Albany Medical College, Albany.——Dr. Richard C. Troutman, assistant professor of clinical surgery (ophthalmology) at Cornell University Medical College, New York City, has been named to the joint post of professor of ophthalmology at the State University of New York College of Medicine at New York City in Brooklyn and director of ophthalmology at the Kings County Hospital, Brooklyn, both on a part-time basis. Dr. Troutman has been affiliated with New York Hospital, Manhattan Eye, Ear and Throat Hospital, New York City, and the Payne Whitney Psychiatric Clinic, New York City.

New York City

Wechsler Lecture.—The first Israel S. Wechsler Lecture will be given on the evening of Dec. 2 at the Mount Sinai Hospital by Dr. John F. Fulton, Sterling Professor of the History of Medicine, Yale University School of Medicine, New Haven, Conn. Dr. Fulton will present "Some Historical Backgrounds of Clinical Neurology" at 8:30 p. m.

Bela Schick Lecture.—The Bela Schick Lecture, "Malformations: Some New Studies of an Old Problem," will be delivered by Dr. Rustin McIntosh, Carpentier Professor of Pediatrics, Columbia University College of Physicians and Surgeons, New York, at 8:30 p. m., Nov. 30, in the Blumenthal Auditorium of Mount Sinai Hospital (Fifth Avenue at 99th Street).

Animal Care Panel.—The Animal Care Panel, an organization of investigators, administrators of animal quarters, animal breeders, and others interested in the care of experimental animals, will meet Dec. 1-2 at the Henry Hudson Hotel (353 W. 57th St.). The program will comprise papers dealing with the physiology and behavior of laboratory animals, their diseases, nutrition, and related problems.

Thomas Salmon Lecture.—"Psychiatric Education and Progress" will be the subject of the 1955 Thomas William Salmon Lecture by Dr. John C. Whitehorn, Nov. 30 (2:30 and 8:30 p. m.) at Hosack Hall of the New York Academy of Medicine. Dr. Whitehorn, professor of psychiatry, Johns Hopkins University School of Medicine, Baltimore, is a former president of the American Board of Psychiatry and Neurology and of the American Psychiatric Association.

Pediatricians Honor Bret Ratner.—At the annual meeting of the American Academy of Pediatrics, the section on allergy presented to Dr. Bret Ratner a scroll with the following inscription: "By unanimous vote of the Section on Allergy of the American Academy of Pediatrics, assembled in Chicago at the Twenty-third Annual Meeting of the Academy, this Scroll is awarded to Bret Ratner, M.D., as an expression of gratitude and appreciation for his untiring services in advancing Pediatric Allergy, As a pioneer investigator and teacher, As organizer of the Section on Allergy and its first Chairman, For his successful efforts in obtaining recognition by certification for Pediatric Allergists in the Subspecialty of Pediatric Allergy."

Conference on Heart Disease.—The New York Heart Association will hold an all-day conference on rheumatic fever and heart disease Nov. 29 at the Biltmore Hotel. Speakers at the morning session will be:

Maclyn McCarty, New York, Biologically Active Products of Group A Streptococci.
Gene H. Stollerman, Chicago, Prophylaxis Against Rheumatic Fever.
Currier McEwen, New York, Treatment of Rheumatic Fever and Carditis.
Robert P. Glover, Philadelphia, Surgical Treatment of Heart Conditions.

Dr. Katharine Dodge Brownell, chairman of the New York Heart Association public health committee, will deliver the opening address at the afternoon session. A panel discussion will follow.

Pediatric Fellowships.—The children's division of the Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, announces the availability of two fellowships in pediatric rehabilitation for pediatricians, made possible by funds supplied by the Association for the Aid of Crippled Children. Training will be offered in the rehabilitation of children with disabilities resulting from neuromuscular, muscular, and orthopedic conditions. The stipend is $4,000, and the training period is one year, beginning Jan. 1 or July 1, 1956. Information can be obtained by writing Dr. George G. Deaver, Director, Children's Division, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, 400 E. 34th St., New York 16.

NORTH CAROLINA

Dr. Carter Honored.—The Carter Travel Club, a group of 48 obstetricians and gynecologists who trained at least one year under Dr. F. Bayard Carter, chairman, department of obstetrics and gynecology, Duke University School of Medicine, Durham, recently presented a portrait of Dr. Carter to the medical school. Dr. Carter, who is president of the American Board of Obstetrics and Gynecology, was awarded the Algernon Sydney Sullivan award last year for "selfless devotion to humanity . . . Countless acts of kindness and generosity to the sick, to the unfortunate and to his associates reflect the nobility of mind and heart which motivates his daily life." A member of the Duke faculty since 1931, Dr. Carter previously taught at Yale University School of Medicine, New Haven, Conn., and was head of the department of obstetrics and gynecology, University of Virginia School of Medicine, Charlottesville. The Carter Travel Club was organized in his honor in 1951 to promote further knowledge in the field of obstetrics and gynecology.

OKLAHOMA

Society News.—Dr. Stewart G. Wolf Jr., professor of medicine, University of Oklahoma School of Medicine, Oklahoma City, will be guest speaker at the dinner meeting of the Tulsa Academy of General Practice Nov. 28, 6:30 p. m. at the Hotel Tulsa, discussing "Evaluation of Gastro-Intestinal Symptoms." For reservations call LUther 2-5904. The scientific program will begin at 8 p. m. Physicians, including those who are not members of the academy, are invited. Dr. Wolf was formerly associate professor of medicine at Cornell University Medical College, New York.

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Medical History Tape Recorded.—Experiences of Oklahoma's pioneer physicians are now tape recorded, through the efforts of the Oklahoma State Medical Assistants Society, which presented a recorder and a supply of tape to the department of archives of the University of Oklahoma for the recording of events of medical history. The first tape recordings were made during the annual meeting in Tulsa in May. In July, a few weeks before the death of Dr. William W. Rucks Sr., Oklahoma City, a recording of his reminiscences was made by the archives department.

Tumor Conference.—The Oklahoma division of the American Cancer Society has announced its third annual tumor conference to be held Dec. 2 at the Huckins Hotel, Oklahoma City. Visiting speakers include Drs. Luke W. Able, professor of pediatric surgery, Baylor University College of Medicine, Houston, Texas; Charles S. Cameron, medical director, American Cancer Society, New York; H. Close Hesseltine, professor of obstetrics and gynecology, University of Chicago School of Medicine; Samuel F. Marshall, surgeon, the Lahey Clinic, Boston; and David A. Wood, director of the Cancer Research Institute, University of California School of Medicine, San Francisco. The program, held in conjunction with the annual meeting of the Oklahoma division of the American Cancer Society, will feature two papers by each of the guest speakers. A clinical pathological conference will be held at 8 a. m. There will be no registration fee, but doctors are requested to register in advance by writing the Oklahoma Division, American Cancer Society, 937 Commerce Exchange Building, Oklahoma City. Reservations are needed for the noon luncheon and evening session. The program will close with the annual dinner of the Oklahoma division of the American Cancer Society at 7 p. m., to which all doctors are invited. The guest speaker will be Dr. Charles S. Cameron, New York.

PENNSYLVANIA

Rheumatic Fever Prevention Study.—A study to establish criteria for streptococcal control in the school population as a nationwide basis for community programs on rheumatic fever prevention will be conducted in three Philadelphia elementary schools by the Heart Association of Southeastern Pennsylvania in cooperation with the American Heart Association and local groups. Earlier studies in a military population demonstrated the efficacy of prompt and adequate penicillin treatment of streptococcal infections in preventing initial rheumatic fever attacks. The Philadelphia study will continue for at least one year. Director is Dr. John P. Hubbard, professor of preventive medicine at the University of Pennsylvania School of Medicine, Philadelphia, who will be assisted by Dr. David Cornfield of the department of preventive medicine and pediatrics.

Philadelphia

Hospital News.—The medical staff of the Presbyterian Hospital has subscribed $115,826 toward the institution's 4 million dollar modernization fund.——Mrs. Henry P. Brown Jr., her three sons, and three daughters have given enough money to build an entire floor in one of Presbyterian Hospital's proposed new wings. The contribution was made in memory of the late Dr. Henry P. Brown Jr., who was a surgical chief at Presbyterian Hospital from 1933 to 1947 and was elected consulting surgeon on the hospital's staff in 1947.

Society News.—The 69th annual banquet of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held at the Penn Sherwood Hotel, 39th and Chestnut streets, Dec. 6. Dr. Thomas Klein will be the honored guest at the dinner, and Dr. Samuel B. Hadden, retiring president of the association, the toastmaster. Cocktails in the oyster bar (6 p. m.) will precede dinner, 7 p. m. Reservations may be procured by writing to the secretary-treasurer, Dr. John D. Corbit Jr., 3717 Chestnut St., Philadelphia 4.

Lectures on Medical Writing.—A new series of lectures on medical writing has been initiated by the Graduate School of Medicine of the University of Pennsylvania. On Nov. 10, "Medical Writing and the Physician" was presented by Dr. Jacques P. Gray, lecturer on medical writing, Parke, Davis and Company, Detroit, and on Nov. 17, "Medical Writing and the Public" by Mr. Pierre C. Fraley, medical editor, *Philadelphia Evening Bulletin*. On Dec. 1 "Medical Illustration" will be discussed by Miss Edna C. Hill, medical illustrator, Hospital of the University of Pennsylvania; "Bibliographic Research" by Miss Virginia Beatty, Library of the Philadelphia College of Physicians; and "Editorial Requirements" by Robert Rowan, managing editor, W. B. Saunders Company. "Selection of Material for Publication" will be the topic on Dec. 8 of Dr. Morris Fishbein, Chicago. "Art of Medical Writing; Use of Words" will be considered Dec. 15 by Dr. Paul R. Hawley, Chicago, director, American College of Surgeons. On Jan. 12, 1956, "Art of Readable Medical Writing" will be presented by Rudolf Flesch, Ph.D., author and educator. The meetings will be held in the Zoology Amphitheatre, 39th Street and Hamilton Walk, at 7 p. m.

Personal.—The Lebanese Republic has awarded a citation and a medal of Knight of the Order of Cedars to Dr. Hobart A. Reimann, formerly professor of medicine, Jefferson Medical College of Philadelphia, for medical services to the people of Lebanon while serving as visiting professor of medicine at the American University of Beirut since 1952.——Dr. Harry E. Bacon, head, department of proctology, Temple University School of Medicine, has been elected an honorary fellow of the Japanese College of Surgeons and the Philippine College of Surgeons. More recently he was given an honorary fellowship in the Brazilian College of Surgeons and the Turkish Surgical Society of Istanbul.——Dr. Donald L. Glenn, regional medical officer of the eastern region, Pennsylvania Railroad, has been appointed medical director, to succeed Dr. Norbert J. Roberts, who resigned. Dr. Glenn has been affiliated with the George F. Geisinger Memorial Hospital and Foss Clinic, Danville, the Mayo Clinic, Rochester, Minn., and the Carle Memorial Hospital Clinic, Urbana, Ill.——Standard Oil Company (New Jersey) has appointed as associate medical director Dr. Norbert J. Roberts, who was a member of its medical department from 1949 to 1952. For three years, Dr. Roberts has been medical director of the Pennsylvania Railroad.

RHODE ISLAND

Grant for Critical Care Unit.—The Rhode Island Hospital, Providence, has received a grant of $56,000 from the John A. Hartford Foundation for the development and evaluation of a specially designed 28-bed nursing unit in the new hospital building to be dedicated soon. This new type of unit, staffed with specially trained personnel, will meet the postoperative needs of patients who have undergone extreme surgery and will also provide more adequate care for critically ill patients.

VIRGINIA

Meeting of Oto-Ophthalmologists.—The Virginia Society of Ophthalmology and Otolaryngology will hold its annual fall meeting in Richmond at the Baruch Auditorium, Medical College of Virginia, Nov. 29-Dec. 2. The speakers for the oto-laryngology program, Tuesday and Wednesday, will be Drs. Victor Alfaro and Aram Glorig, Washington, D. C.; Lawrence R. Boies, Minneapolis; Robert J. Huebner, Bethesda, Md.; Lyle M. Sellers, Dallas, Texas; Ben H. Senturia, St. Louis; and Henry P. Wagener, Rochester, Minn. The ophthalmology program (Thursday and Friday) according to the announcement will have as speakers Drs. Howell W. Brown, James Spencer Dryden, Washington, D. C., William M. Hart, Bethesda, Md., William Howard, Edward Norton, and Henry P. Wagener.

Personal.—Dr. Ezra Goyings Jr., Richmond, has been appointed to the staff of Greenbrier Valley Hospital in Ronceverte, W. Va. ——Dr. Hubert D. Crow, health director at Fredericksburg since 1948, has been appointed director of the state health department's new medical training section. He will also, with the help of an assisting physician, carry the dual post of health director for Suffolk and the counties of Isle of Wight, Southampton, and Nansemond. His headquarters will be in Suffolk, where he succeeds Dr. William H. Michael, who has retired.

GENERAL

Meeting on Thoracic Surgery.—The second annual meeting of the Southern Thoracic Surgical Association will be held at the Greenbrier, White Sulphur Springs, W. Va., Dec. 2-5. The guest speaker, Dr. C. Walton Lillehei, University of Minnesota Medical School, Minneapolis, will discuss "Experiences with Open Cardiac Procedures for Various Congenital Conditions."

Grants in Cerebral Palsy.—United Cerebral Palsy, 369 Lexington Ave., New York 17, has approved 46 grants totaling $395,000 as the spring series of its 1955-1956 research and training program, of which 23 are for medical research. The remainder will be used to train professional personnel to make treatment and other care available to more of the cerebral palsied. Included are fellowship and scholarship programs for physicians, physical and occupational therapists, teachers, dentists, vocational guidance counselors, and pediatric neurologists. Other training grants support summer workshops or year-round training programs at hospitals and universities.

Safe Driving Day.—The President's Committee for Traffic Safety is sponsoring a special day dedicated to safe driving, S-D Day, Dec. 1, in an attempt to hold deaths and injuries to the lowest possible level for a 24-hour period. The National Safety Council points out that "while perfection probably is too much to expect—even for one day—from a combination of about 72 million drivers and 58 million motor vehicles, no sensible person would argue for a minute that the usual toll cannot be substantially cut by more sensible driving." It is hoped that the S-D Day record this year will show an improvement over the 15% reduction in deaths achieved on S-D Day last year.

Hematologists Meet in Boston.—The International Society of Hematology will hold its sixth congress at the Hotel Somerset in Boston, Aug. 27-Sept. 1, 1956, under the presidency of Dr. William Dameshek of that city. Themes of the session will include immunohematology (Monday); nucleonics in hematology (Tuesday); leukemia and related states (Thursday); anemia (Friday); and hemorrhagic disorders (Saturday). An all-day excursion on the ocean-going Boston Belle to Provincetown at the tip of Cape Cod, a New England clambake, and moonlight dancing are planned for Wednesday. Communications should be addressed to the International Society of Hematology, New England Medical Center, Harrison Avenue at Bennet Street, Boston 11.

Southern Surgical Association.—The 67th annual session of the Southern Surgical Association will convene at the Homestead Hotel, Hot Springs, Va., Dec. 6-8 under the presidency of Dr. Carrington Williams, Richmond, Va. The presidential address Tuesday, 9:30 a. m., will be followed by "The Treatment of Mass Casualties in Disaster" by Dr. Frank B. Berry, Washington, D. C. The 44 presentations scheduled include participation by 26 invited speakers. The association cocktail party Wednesday, 6:30 p. m., will precede the dinner at which Dr. John M. T. Finney Jr., Baltimore, will serve as toastmaster. The guest speaker, Sir Yevrah Enots, M.D., H.K.R.S., of Addis Ababa, Abyssinia, will discuss "Some Experiences of a Surgeon at a Royal Court."

Typhoid Infection.—According to the U. S. Public Health Service, the California Department of Public Health reported typhoid infection in a 70-year-old woman who had a hip abscess from which a culture revealed Salmonella typhosa, phage type C. The patient had had typhoid fever at the age of 12. The abscess was discovered 58 years later, 3 years after an open reduction and nailing for fracture of the right femur following an automobile accident. An infection was reported also in a 46-year-old woman who had an abscess at the site of a cholecystectomy scar. Salmonella typhosa, phage type 26, was isolated from this abscess. The patient stated that she had never had typhoid fever. She had spent 14 years in Mexico and had made numerous return visits.

Certification of Psychiatrists.—At the October meeting of the American Board of Psychiatry and Neurology, the following regulations were adopted: 1. All applicants who wish to qualify for examination for certification in psychiatry or neurology under the regulations relating to training credit and who began training on or after July 1, 1956, must show that at least 24 months of their residency training have been secured in residency training programs approved for at least two years of residency training in the specialty in which they seek certification. 2. Because of an increase of all expenses in conducting the examination, the following fee schedule will be in effect as of Jan. 1, 1956: application fee, $50; examination fee, $75; complete re-examination fee, $75; partial reexamination fee, $50.

Meeting on Clinical Research.—The eastern section of the American Federation for Clinical Research will hold its annual meeting Dec. 2-3 at the College of Physicians Building (19 S. 22nd St., Philadelphia). During the opening session Friday morning "Peripheral Venous Responses to Body Cooling and Warming in Man" will be presented by Drs. J. Edwin Wood and John W. Eckstein, Boston (by invitation), and "Hemodynamic Effects of the Hufnagel Valve" by Drs. Joseph Roshe and J. Alexander Haller Jr., Bethesda, Md. (by invitation). The 37 presentations will include participation by 53 invited speakers. The National Drug Company, Philadelphia, will be host at luncheon on Friday. The social hour, courtesy of Smith, Kline and French, will precede the dinner Friday, at which Wyeth Laboratories will be host.

Chest Physicians Meet in Boston.—The interim session of the American College of Chest Physicians will be held at the Sheraton-Plaza Hotel, Boston, Nov. 27-28. A scientific program, sponsored by the New England states chapter of the college, will include panel discussions, "The Short-of-Breath Patient" and "Hemoptysis," and a diagnostic-treatment conference. Round-table luncheon discussions are scheduled on cor pulmonale and on antimicrobial agents. At the cocktail party and dinner Dr. James H. Stygall, Indianapolis, president, American College of Chest Physicians, will be the guest of honor. Fireside conferences are planned on emphysema, tumors of the lung, coronary disease, immunity and vaccination in tuberculosis, angiocardiography, and advances in cardiac surgery. All physicians are cordially invited to attend the scientific sessions; there is no registration fee.

Conference on Public Welfare.—The 25th anniversary of the American Public Welfare Association will be celebrated at the biennial round-table conference, Nov. 30-Dec. 3, in the Hotel Statler, Washington, D. C. The opening session Wednesday morning will be addressed by Charles I. Schottland, commissioner of social security, Social Security Administration, Department of Health, Education, and Welfare, Washington, D. C. The round-table discussions will include: Public Welfare Services for Older People; (1) Improving the Quality of Tax-Supported Medical Care and (2) Public Child Welfare Services—Past and Future (Thursday morning); (1) Purposeful Living Through Rehabilitation and (2) What Should the Welfare Department Expect from the Health Department? (Friday morning); Mental Health and the Community (Friday afternoon); and Standards Help in Care of the Chronically Ill (Saturday morning).

Meeting on Hypnosis.—The Society for Clinical and Experimental Hypnosis will hold its sixth annual scientific meeting at the New York Academy of Sciences (2 E. 63rd St., New York City) Dec. 3. Remarks by the president, Dr. Jerome M. Schneck, New York City, will precede a program reported here in part:

Use of Hypnosis in Evaluating the Physiological and Psychological Components in the Functional Impairment of the Patient with Multiple Sclerosis, Arthur Shapiro, Brooklyn, and Milton V. Kline, Ed.D., Long Island University, Brooklyn.

Control of the Dumping Syndrome by Hypnosis, Roy M. Dorcus, Ph.D., Los Angeles, and Philip Goodwin, Ph.D., Sawtelle Center, Veterans Administration, Los Angeles.

Hypnosis and the Dissociative Reactions, Louis Jolyon West, University of Oklahoma School of Medicine, Oklahoma City.

Request for dinner reservations (Barbizon Plaza Hotel, Dec. 3, 7 p. m., $7 per person) should be sent with check to J. Stolzenberg, D.D.S., 1 Nevins St., Brooklyn 17.

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Symposium on Geriatric Medicine.—A graduate symposium on geriatric medicine will be presented by the American Geriatrics Society Nov. 30-Dec. 1 at the Hotel Roosevelt, New York City. A panel on heart disease Wednesday, 3:45 p. m., will have as moderator Dr. Charles T. Stone Sr., Galveston, Texas, and as participants Drs. David Lehr, Harold E. B. Pardee, Harry Gold, and Robert L. Levy, New York City, and Dr. Wesley E. Peltzer, Salt Lake City. Dr. Walter Bauer, Boston, will moderate a panel on rheumatic diseases Thursday, 2 p. m., at which the participants will be Drs. Russell L. Cecil, Richard H. Freyberg, and Charles A. Ragan, New York City, and Dr. Joseph Lee Hollander, Philadelphia. The sessions will close with a panel on some psychological and psychiatric problems of old age, Thursday, 4:30 p. m. Dr. Edward B. Allen, White Plains, N. Y., will serve as moderator. Dr. Hollis E. Clow, White Plains, N. Y., Dr. David C. Wilson, Charlottesville, Va., and Mr. Clark Tibbitts, chairman, Committee on Aging, Department of Health, Education, and Welfare, Washington, D. C., will be collaborators. Dr. Edward E. Henderson, Montclair, N. J., is president of the society.

Surgeons Meet in Seattle.—The Western Surgical Association will hold its 63rd annual meeting at the Olympic Hotel, Seattle, Dec. 1-3. A premeeting clinic day is scheduled for Nov. 30. Operative clinics will be held at the Virginia Mason Hospital and the Swedish Hospital Wednesday morning. At 1 p. m. buses will leave the Olympic Hotel for the University of Washington School of Medicine, where Dr. Fred T. Kolouch, Twin Falls, Idaho, will serve as moderator for the program at 1:30 p. m. and Dr. Lyon H. Appleby, Vancouver, B. C., as moderator for the program at 2:50 p. m. The local arrangements committee will be host at a cocktail party at the Rainier Club, 6-7:30 p. m. The sessions will open Monday at 8:30 p. m. with "The Treatment of Carcinoma of the Hypopharynx and the Cervical Esophagus" by Dr. Orville F. Grimes, San Francisco (by invitation), after which an invitational address, "Carcinoma of the Esophagus," will be presented by Drs. Gerald S. Wilson and Joel E. Powers, Detroit. In all, the 37 presentations will include participation by 49 other speakers. The presidential address, "Doctor of Both Medicines," will be given by Dr. Michael L. Mason, Chicago, Friday morning. Cocktails Friday, 6:30 p. m., will precede the banquet at 7 p. m. Thursday afternoon is reserved for a cruise on Elliott Bay and Lake Washington. Dinner at the Seattle Yacht Club, 5 p. m., will be followed by a performance at the University of Washington Penthouse Theatre, 8 p. m.

Health Education Meeting.—The New England Health Education Association will present a fall meeting and luncheon testimonial Dec. 2, in Boston, in honor of Ira V. Hiscock, M.P.H., New Haven, Conn., president, American Public Health Association. The morning will be devoted to (1) a tour of the scientific and technical exhibits of the American Medical Association in connection with its clinical session and (2) a special showing of two health education films. At the testimonial luncheon in the Sheraton-Plaza Hotel (advance reservation requested), greetings will be extended by Dr. Elmer Hess, Erie, Pa., President, American Medical Association, before an address, "Health Education and Medical Research" by John E. Fogarty, M.C., Representative from the second Rhode Island District, and chairman, House subcommittee on appropriations, health, welfare, and education. At a meeting open to members and guests, 3 p. m., Dr. Charles C. Wilson, professor of education and public health, Yale University School of Medicine, New Haven, Conn., will serve as moderator for a panel-forum, "Consolidating for School Health Services," in which Drs. John E. Farley, school physician, East Providence, R. I., and Edward W. Colby, health director, Department of Health, Portland, Maine, will participate. Dr. Donald A. Dukelow, Chicago, consultant in health and fitness, Bureau of Health Education, American Medical Association, will be the summarizer. The Desitin Chemical Company of Providence, R. I., will be host at a reception and cocktail hour, 5:30 p. m.

Society News.—The **Tri-State Medical Association of the Carolinas and Virginia** invites participation in the program of its 59th annual meeting at Charlotte, N. C., Feb. 20-21, 1956. Titles of papers should be sent to Dr. Roy B. McKnight, Professional Building, Charlotte, N. C.——At its 60th annual convention in Los Angeles, the **National Medical Association** presented its Distinguished Service award medal to Dr. W. Montague Cobb, Washington, D. C., for scientific endeavors in medical and other fields and the award for the General Practitioner of the Year to Dr. W. Burlin Humphrey of Los Angeles. Certificates and gold medals were awarded to about 200 physicians who had been practicing 40 years or more. The following officers were elected: Dr. August C. Terrence, Opelousas, La., president; Dr. Theodore R. M. Howard, Mound Bayou, Miss., president-elect; Drs. Vaughan C. Mason, New York, James S. Smith, Muncie, Ind., and Elias B. Thompson, Williamson, W. Va., vice-presidents; Dr. John T. Givens, Norfolk, Va., executive secretary; and Dr. Eugene T. Taylor, St. Louis, treasurer. The 1956 convention will be held in New York City.——The **National Multiple Sclerosis Society** has appointed as director of the medical and scientific department, Frederick L. Stone, Ph.D., assistant for professional services to the vice-chancellor, School of the Health Professions, University of Pittsburgh, and a member of the executive committee of the medical advisory board of the society. Dr. Stone's primary responsibility will be to develop expanded research and medical programs.

Meeting on Dermatology and Syphilology.—The American Academy of Dermatology and Syphilology will hold its 14th annual meeting Dec. 3-8 at the Palmer House, Chicago, under the presidency of Dr. Arthur C. Curtis, Ann Arbor, Mich. Special courses will be presented Saturday and Sunday on histopathology; mycology; x-ray and radium therapy; bacteriology and virology of the skin; application of research methods to dermatology; anatomy and embryology; special problems in dermatohistopathology. Noon informal discussion groups have been scheduled daily Sunday through Wednesday and afternoon informal discussion groups for Monday and Tuesday. The following round-table panels will be presented: Eczematous Eruptions of the Hands; Techniques in the Application of X-Ray and Radium; Common Dermatoses; Light-Sensitive Dermatoses and Porphyria; Medical Writing; Dermatologic Photography; Military Dermatology; Eczema of Infants and Children; Techniques in the Application of X-Ray and Radium; and Cutaneous Testing. The sessions will open Monday at 10:30 a. m. with special lectures on endocrinology in relation to dermatology (Dr. Francis E. Senear, Chicago, director). On Tuesday a special lecture, "Cause and Effect in Relation to Disease," will be presented at 8:30 p. m. by Dr. William Boyd, Toronto, Canada. Tuesday afternoon Dr. George C. Andrews, New York, will serve as chairman for a panel on the diagnosis and treatment of cutaneous malignancy, with Dr. John R. Freid, chief of the radioisotope service at Montefiore Hospital and Bronx Hospital, New York, as guest. An all-day clinical pathological conference is scheduled for Wednesday. The 16 symposiums will include an all-day symposium on pharmaceutical therapeutics Thursday. The first presentation at the symposium on cutaneous granulomas Tuesday morning will be "Tuberculosis of the Skin," the first John E. Rauschkolb Memorial Lecture, by Dr. J. J. Zoon, professor of dermatology, University of Utrecht, Holland. Cocktails at 6:30 p. m. will precede the annual banquet and entertainment Wednesday (formal dress optional). The next two annual meetings of the academy will be held Dec. 8-13, 1956, and Dec. 7-12, 1957, at the Palmer House.

Easter Seal Convention.—The annual convention of the National Society for Crippled Children and Adults will convene at the Palmer House, Chicago, Nov. 28-30. Dr. Leonard A. Scheele, surgeon general, U. S. Public Health Service, Washington, D. C., will be among the speakers at the opening session Monday, 9:30 a. m. At 11:30 a. m. the exposition on employment of the physically handicapped will have its grand opening. This exposition will feature on-the-job demonstrations of disabled employees. More than 75 firms located in various industrial areas of the United States will be among the exhibitors participating in this free exhibit, which will be sponsored by the society, the President's Committee on Employment of the Handicapped, and the Illinois Governor's Committee on Employment of the Physically Handicapped. Dr. Clinton L.

Compere and associates, Chicago, will participate in the seminar for physicians, physical therapists, and occupational therapists (Monday afternoon), "Techniques in Amputee Training," which will include a clinic demonstration of patients. The theme of the convention, "Conquering Crippling," will be elaborated in the presentation Tuesday, 9:30 a. m., of "The Role of the General Practitioner in Conquering Crippling" by Dr. John R. Fowler, Barre, Mass., president, American Academy of General Practice. Tuesday afternoon seminars will deal with speech rehabilitation and the social and emotional adjustment of the teenage crippled child. The Wednesday morning session will be opened at 9:30 a. m. with presentation of "New Resources for Conquering Crippling" by Mary Switzer, director, U. S. Office of Vocational Rehabilitation, Department of Health, Education, and Welfare, Washington, D. C., which will be followed by "Conquering Crippling As I See It" by Dr. Harold B. Boyd, associate professor of orthopedic surgery, University of Tennessee College of Medicine, Memphis, Tenn., and past-president, American Academy of Orthopaedic Surgeons. "The Compleat Person" by Dr. Francis J. Braceland, Hartford, Conn., president-elect, American Psychiatric Association, will precede discussion of "Conquering Crippling—Whose Responsibility?" for which Mr. Lawrence Spivak, Washington, D. C., and New York, producer of the television program, "Meet the Press," will serve as chairman.

CORRECTION

Cooley's Trait.—Throughout the letter from Israel entitled "Cooley's Anemia in Oriental Jews" in THE JOURNAL, Sept. 24, 1955, page 395, the words "Cooley's trait" should be substituted for "Cooley's anemia." Cooley's trait was described by Dreyfuss; its characteristics are given in the letter but are erroneously ascribed to Cooley's anemia.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

1956 Clinical Meeting, Seattle, Nov. 27-30.

1957 Annual Meeting, New York, June 3-7.

1957 Clinical Meeting, Philadelphia, Dec. 3-6.

NATIONAL MEDICAL PUBLIC RELATIONS CONFERENCE, Hotel Statler, Boston, Nov. 28. Mr. Leo F. Brown, 535 N. Dearborn St., Chicago 10, Director.

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY, Palmer House, Chicago, Dec. 3-8. Dr. James R. Webster, 55 East Washington St., Chicago 2, Secretary.

AMERICAN ACADEMY OF OBSTETRICS AND GYNECOLOGY, Conrad Hilton Hotel, Chicago, Dec. 13. Dr. C. Paul Hodgkinson, 116 South Michigan Blvd., Chicago, Secretary.

AMERICAN LEAGUE AGAINST EPILEPSY, Roosevelt Hotel, New York, Dec. 8. Dr. Peter Kellaway, Baylor University College of Medicine, Houston 25, Tex., Secretary.

AMERICAN RHEUMATISM ASSOCIATION, Interim Session, National Institutes of Health, Bethesda, Md., Dec. 9. Dr. Edward F. Hartung, 580 Park Ave., New York 21, Secretary.

ASSOCIATION FOR RESEARCH IN NERVOUS AND MENTAL DISEASES, Hotel Roosevelt, New York, Dec. 9-10. Dr. Clarence C. Hare, 710 West 168th St., New York 32, Secretary.

EASTERN SECTION, AMERICAN FEDERATION FOR CLINICAL RESEARCH, Hotel Warwick and College of Physician's Building, Philadelphia, Dec. 2-3. Dr. Charles R. Shuman, Temple Univ. Hospital, Broad and Ontario Sts., Philadelphia 40, Chairman.

EASTERN SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Boston, Jan. 13. Dr. John A. Murtagh, Dartmouth College, Hanover, N. H., Vice President.

LOS ANGELES MIDWINTER MEDICAL CONVENTION, Biltmore Hotel, Los Angeles, Jan. 3-5. Dr. Paul D. Foster, 1925 Wilshire Blvd., Los Angeles 58, General Chairman.

MIDDLE SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Netherland Plaza, Cincinnati, Jan. 16. Dr. William H. Craddock, 2328 Auburn Ave., Cincinnati 19, Vice President.

MEDICAL SOCIETY EXECUTIVES CONFERENCE, Parker House, Boston, Nov. 27. Mr. H. Martin Baker, 1102 South Hillside, Witchita 17, Kansas, Secretary.

NEW ENGLAND HEALTH EDUCATION ASSOCIATION, Boston, Dec. 2. Miss Wyntha Tompkins, Middlesex Health Association, Essex, Mass., Secretary.

PUERTO RICO MEDICAL ASSOCIATION, Santurce, Dec. 7-11. Dr. Luis R. Guzman-Lopez, Box 9111, Santurce, Secretary.

RADIOLOGICAL SOCIETY OF NORTH AMERICA, Palmer House, Chicago, Dec. 11-16. Dr. Donald S. Childs, 713 E. Genesee St., Syracuse 2, N. Y., Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

DETROIT, Dec. 3. Dr. H. Marvin Pollard, 1313 East Ann St., Ann Arbor, Mich., Governor.

HOT SPRINGS, ARK., Dec. 3. Dr. A. A. Blair, 100 S. 14th St., Ft. Smith, Ark., Governor.

WINSTON-SALEM, N. C., Dec. 8. Dr. Elbert Persons, Duke Hospital, Durham, N. C., Governor.

SHREVEPORT, LA., Jan. 14, Dr. M. D. Hargrove, 803 Jordan St., Shreveport, La., Governor.

PHILADELPHIA, Jan. 20. Dr. Thomas M. McMillan, 330 South 9th St., Philadelphia 7, Governor.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:

JACKSONVILLE, FLA., Hotel George Washington, Jan. 16-18. Dr. Kenneth A. Morris, 2522 Oak St., Jacksonville 4, Fla., Chairman.

SOUTHERN SECTION, AMERICAN FEDERATION FOR CLINICAL RESEARCH, Jung Hotel, New Orleans, Jan. 20. Dr. John H. Moyer, 1200 M.D. Anderson Blvd., Houston, Tex., Secretary.

SOUTHERN SURGICAL ASSOCIATION, The Homestead, Hot Springs, Va., Dec. 6-8. Dr. George G. Finney, 2947 St. Paul St., Baltimore 18, Secretary.

SOUTHERN THORACIC SURGICAL ASSOCIATION, The Greenbrier, White Sulphur Springs, W. Va., Dec. 2-5. Dr. Hawley H. Seiler, 442 West Lafayette St., Tampa 6, Fla.

WESTERN SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, County Medical Society Bldg., San Francisco, Jan. 21. Dr. David D. DeWeese, 1216 S. W. Yamhill St., Portland, Ore., Vice President.

WESTERN SURGICAL ASSOCIATION, Olympic Hotel, Seattle, Dec. 1-3. Dr. John T. Reynolds, 612 N. Michigan Blvd., Chicago 11, Secretary.

FOREIGN AND INTERNATIONAL

ALL INDIA MEDICAL CONFERENCE, Jaipur, India, Dec. 26-28. Dr. B. N. Consul, Association Bldg., S.M.S. Hospital Premises, Jaipur, India, Organizing Secretary.

CANADIAN MEDICAL ASSOCIATION, Quebec, P. Q., Canada, June 10-14, 1956. Dr. Arthur D. Kelly, 150 St. George St., Toronto 5, Ont., Canada, Secretary.

CONFERENCE OF INTERNATIONAL UNION FOR HEALTH EDUCATION OF THE PUBLIC, Rome, Italy, Apr. 27-May 5, 1956. Mr. Lucien Viborel, 92 rue St. Denis, Paris 1er, France, Secretary-General.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Miami Beach, Fla., U.S.A., April 9-12, 1956. For information write: Dr. R. J. Whitacre, 13951 Terrace Road, Cleveland 12, Ohio, U. S. A.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LIMNOLOGY, Helsinki, Finland, July 26-Aug. 7, 1956. For information address: Dr. H. Luther, Snellmansgatan 16 C 36, Helsinki, Finland.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LOGOPEDICS AND PHONIATRICS, Barcelona, Spain, Sept. 3-7, 1956. Dr. J. Perello, Provenza 319, Barcelona 9, Spain, Secretary-General.

CONGRESS OF INTERNATIONAL SOCIETY OF HEMATOLOGY, Hotel Somerset, Boston, Mass., U.S.A., Aug. 27-Sept. 1, 1956. Dr. W. C. Moloney, 39 Bay State Road, Boston, Mass., U.S.A., Secretary.

CONGRESS OF LATIN SOCIETY OF OPHTHALMOLOGY, Madrid, Spain, April 24-28, 1956. For information address: Dr. Costi, Montalban 3, Madrid, Spain.

EUROPEAN CONGRESS OF ALLERGOLOGY, Florence, Italy, Sept. 12-15, 1956. Prof. Umberto Serafini, Instituto de Patologia Medica, Viale Morgagni, Florence, Italy, Secretary-General.

EUROPEAN CONGRESS OF CARDIOLOGY, Stockholm, Sweden, Sept. 10-14, 1956. Dr. Karl Erik Grewin, Sodersjukhuset, Stockholm, Sweden, General Secretary.

EUROPEAN SYMPOSIUM ON VITAMIN B_{12}, Hamburg, Germany, May 1956. For information write: Doz. Dr. H. Bauer, Nervenklinik. Hamburg-Eppendorf, Germany.

INTER-AMERICAN CONGRESS OF CARDIOLOGY, Havana, Cuba, Nov. 4-10, 1956. For information address: Dr. Ramon Aixala, Apartado 2108, Havana, Cuba.

INTERNATIONAL ACADEMY OF PATHOLOGY, Cincinnati, Ohio, U. S. A., April 24-25, 1956. Dr. F. K. Mostofi, Armed Forces Institute of Pathology, Washington 25, D. C., U. S. A., Secretary.

INTERNATIONAL CONGRESS AGAINST ALCOHOLISM, Istanbul, Turkey, Sept. 10-15, 1956. For information address: International contre l'Alcoolisme, Case Gare 49, Lausanne, Switzerland.

INTERNATIONAL CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES, Philadelphia, Pa., U. S. A., Sept. 2-9, 1956. Dr. William N. Fenton, National Research Council, Division of Anthropology and Psychology, 2101 Constitution Avenue, Washington 25, D. C., U. S. A., Secretary-General.

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INTERNATIONAL CONGRESS OF BLOOD TRANSFUSION, Boston, Mass., U. S. A., Aug. 29-Sept. 2, 1956. Dr. J. Julliard, 57, Boulevard L'Auteuil, Boulonge-sur-Seine, France, Secretary General.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Cologne, Germany, Aug. 19-23, 1956. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, U. S. A., Executive Director.

INTERNATIONAL CONGRESS OF ENTOMOLOGY, Montreal, Canada, Aug. 17-25, 1956. Mr. J. A. Downes, Science Service Bldg., Carling Ave., Ottawa, Ont., Canada, Secretary.

INTERNATIONAL CONGRESS OF GASTROENTEROLOGY, London, England, July 18-21, 1956. Mr. Hermon Taylor, London Hospital, White Chapel, London E.1, England, Honorable Secretary.

INTERNATIONAL CONGRESS FOR THE HISTORY OF SCIENCE, Florence and Milan, Italy, Sept. 3-10, 1956. Dr. M. L. Bonelli, Instituto di Ottica, Arcetri, Florence, Italy, Secretary-General.

INTERNATIONAL CONGRESS OF HUMAN GENETICS, Copenhagen, Denmark, Aug. 1-6, 1956. For information address: The University Institute for Human Genetics, Tagensvej 14, Copenhagen N, Denmark.

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Athens, Greece, Sept. 14-18, 1956. Prof. B. Kourias, Croix-Rouge Hellenique, 1 rue Mackenzie King, Athens, Greece, Secretary-General.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Madrid, Spain, Sept. 19-23, 1956. Dr. J. C. De Oya and Dr. J. Gimena, Hostaleza No. 90, Madrid, Spain, Secretaries.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Palmer House, Chicago, Illinois, U. S. A., Sept. 9-13, 1956. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF NEO-HIPPOCRATIC MEDICINE, Montecatini, Terme, Italy, May 20-22, 1956. Dr. Valente, 41 Avenue Verdi, Montecatini Terme, Italy, Secretary-General.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Copenhagen, Denmark, July 22-27, 1956. Professor P. Plum, Rigshospitalet, Copenhagen, Denmark, President.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, Copenhagen, Denmark, August 20-24, 1956. Dr. B. Strandberg, Kobenhavns amts sygehus i Gentofte, Dept. of Rheumatology and Physical Medicine, Hellerup, Denmark, Honorable Secretary.

INTERNATIONAL CONGRESS OF PHYSIOPATHOLOGY OF ANIMAL REPRODUCTION AND ARTIFICIAL INSEMINATION, Cambridge, England, June 25-29, 1956. For information address: Dr. Joseph Edwards, Production Division, Milk Marketing Board, Thames Ditton, Surrey, England.

INTERNATIONAL CONGRESS OF RADIOLOGY, Mexico, D. F., Mexico, July 22-28, 1956. Dr. Jose Noriega, Tepic 126 (2e piso), Mexico, D. F. 7, Mexico, Secretary General.

INTERNATIONAL CONGRESS OF WORLD CONFEDERATION FOR PHYSICAL THERAPY, Hotel Statler, New York, New York, U. S. A., June 17-23, 1956. For information address: Miss Mildred Elson, American Physical Therapy Association, 1790 Broadway, New York 19, New York, U. S. A.

INTERNATIONAL GENETICS SYMPOSIUM, Tokyo and Kyoto, Japan, Sept. 6-12, 1956. For information address: Secretary, International Genetics Symposium, Science Council of Japan, Ueno Park, Tokyo, Japan.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Brussels, Belgium, July 29-Aug. 5, 1956. For information address: Prof. J. Reuse, Faculte de Medicine et de Pharmacie, 115 Boulevard de Waterloo, Brussels, Belgium.

INTERNATIONAL PROFESSIONAL UNION OF GYNECOLOGISTS AND OBSTETRICIANS, Madrid, Spain, Sept. 28-29, 1956. Dr. Jacques Courtois, 1 rue Racine, St-Germain-en-Laye (S and O), France, Permanent International Secretary-General.

LATIN AMERICAN CONGRESS OF PATHOLOGY, Mexico, D. F., Mexico, Dec. 11-17. For information address: Laboratorio de Anatomia Patologica, Instituto N. de Cardiologia, Avenida Cuauhtemoc 300, Mexico 7, D. F., Mexico.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, San Juan, Puerto Rico and Curacao, N.W.I., Jan. 29-Feb. 8, 1956. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, New York, U. S. A., Executive Director.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION, EXTRAORDINARY GENERAL ASSEMBLY, Burgenstock, Nidwalden, Switzerland, Sept. 21-23, 1956. Dr. Janet Aitken, 30a Acacia Road, London N.W. 1, England, Secretary.

NORTH QUEENSLAND MEDICAL CONFERENCE, Cairns, North Queensland, Australia, June 25-30, 1956. Dr. W. R. Horsfall, P. O Box 672, Cairns, N.Q., Australia, Secretary.

PAN-AMERICAN ACADEMY OF GENERAL PRACTICE, San Juan, Puerto Rico and Curacao, N.W.I., Jan. 29-Feb. 8, 1956. Dr. Arturo Martinez, 54 East 72d St., New York 21, New York, U. S. A., Secretary.

PAN AMERICAN CONGRESS OF GASTROENTEROLOGY, Havana, Cuba, Jan. 20-27, 1956. For information address: Dr. Norberto M. Stapler, 1267 J. E. Uriburu, Buenos Aires, Argentine, S. A.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY, Santiago, Chile, S. A., Jan. 9-14, 1956. Dr. Rene Contardo, Huerfanos 930, Of. 74, Santiago, Chile, Secretary General.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, San Juan, Puerto Rico, April 8-12, 1956. Dr. C. E. Munoz MacCormick, Apartado 9111, Santurce 29, Puerto Rico, Secretary General.

PAN AMERICAN MEDICAL WOMEN'S ALLIANCE, Santiago, Chile, March 6-13, 1956. For information address: Dr. Eva Cutright, 458 Beall Ave., Wooster, Ohio, U. S. A.

WORLD CONGRESS ON FERTILITY AND STERILITY, Naples, Italy, May 18-26, 1956. For information address: Prof. G. Tesauro, S. Andrea della Dame, 19, Naples, Italy.

WORLD MEDICAL ASSOCIATION, Havana, Cuba, Oct. 9-15, 1956. Dr. Louis H. Bauer, 345 East 46th St., New York 17, New York, U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY. *Written.* Various centers, July 26. *Oral.* St. Louis, Oct. 12-15. Sec., Dr. B. M. Kesten, One Haven Ave, New York 32.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Chicago, Nov. 30-Dec. 1. *Subspecialties. Cardiovascular Disease.* Chicago, Nov. 30. The closing date for acceptance of application for gastroenterology was Feb. 1, and for cardiovascular disease the closing date was June 1. *Written.* Oct. 15, 1956. Final date for filing application is May 1. *Oral Examinations in 1956.* New Orleans, Feb. 7-10; Los Angeles, April 12-14; Chicago, June 7-9. Final date for filing application for these three oral examinations is Jan. 3. New York City, Sept. 21-25. Final date for filing application is April 1. Exec. Sec., Dr. William A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* New Haven, November. Oral examinations given in Spring and Fall. Final date for filing application for the Spring examination was October 1; for the Fall examination April 1. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, St. Louis 10.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written Examination and submission of Case Reports. Part I.* Various locations in United States and Canada, and military centers outside of the Continental United States, Feb 3, 1956. Final date for filing application was Oct. 1. *Oral and Pathological Examinations. Part II.* Chicago, May 11-20, 1956. Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* January 24-26, 1956. *Practical Examination.* San Francisco, June 18-21, St. Louis, Oct. 20-25. Applications for 1957 written examination must be filed before July 1, 1956. Sec., Dr. Merrill J. King, Box 236, Cape Cottage Branch, Portland 9, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral.* Jan. 26-27. Final date for filing application was Aug. 15. *Part I. Oral and written.* Various centers, April 1956. Final date for filing application is Nov. 30. Sec., Dr. Harold A. Sofield, 116 South Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY. *Oral.* Montreal, Canada, May 6-10. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Washington, D. C., Dec 2-4 Admin. Sec., Mrs. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION. *Parts I and II.* Chicago, June 16-17. Sec., Dr. Earl C. Elkins, 200 First St., S. W., Rochester, Minn.

AMERICAN BOARD OF PLASTIC SURGERY. *Entire Examination.* Buffalo, May 13-15. Final date for filing case reports is Jan. 1. Corres. Sec., Mrs. Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Certification in Public Health.* Kansas City, Mo., Nov. 10-12. Sec.-Treas., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore 5.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York City, December. Philadelphia, April 16-18, 1956. Sec., Dr. David A. Boyd, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: Chicago, Dec. 4. Final date for filing applications for the fall examination was July 1. Candidates who will complete their training by Dec. 31 will be eligible to appear for this examination. Deadline for filing applications for the Spring 1956 examination is Jan. 1. Those candidates who will complete their training by June 30, will be eligible to appear at this examination. Sec., Dr. B. R. Kirklin, Kahler Hotel Bldg., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part I.* Centers throughout the United States, in Europe and in the Far East, March 28. Closing date for the March examination is December 1. *Part II.* New York City, Nov. 14-15; St. Louis, Dec. 12-13; New Orleans, Jan. 16-17; Los Angeles, Feb. 13-14; San Francisco, Feb. 16-17; Durham, March 12-13; Boston, May 14-15 and Philadelphia, June 4-5. Sec., Dr. John B. Flick, 255 S. Fifteenth St., Philadelphia 2.

BOARD OF THORACIC SURGERY. *Written.* February 1956. Closing date for filing application is Dec. 1. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2, Mich.

MAGAZINE–TELEVISION REPORT

The following list of current medical articles in mass-circulation magazines and forthcoming network television programs on medical subjects is published each week only for the information of readers of THE JOURNAL. *Unless specifically stated, the American Medical Association neither approves nor disapproves of the articles and programs reported.*

TELEVISION

Sunday, Dec. 4

NBC-TV, 10:30 p. m. EST. "March of Medicine," produced in cooperation with the American Medical Association, presents "Alcoholism—the Revolving Door," featuring case histories of alcoholics and remarks by Marvin A. Block, chairman of the A. M. A. Committee on Alcoholism.

Monday, Dec. 5

NBC-TV, 11 a. m. to 12 noon EST. "Medical and Health News with Howard Whitman," a segment of the "Home" show.

NBC-TV, 9 p. m. EST. "Medic," in a drama titled "Pray Judgment," shows how a post mortem after the death of a child proves that the death was accidental and not the result of negligence by the child's aunt.

ABC-TV, 9:30 p. m. EST. "Medical Horizons" visits Duke University School of Medicine, Durham, N. C., to report on work done so far with the problem of headache. Produced in cooperation with the American Medical Association.

MAGAZINES

Look, Nov. 29, 1955

"He Lost 125 Pounds in 7 Months," by Peter Van Slingerland

A family doctor helps a 21-year-old farm boy back to good health through a controlled, low-calorie diet. He once weighed 297 lb.

Look, Dec. 13, 1955

"War Among the Doctors," by Roland H. Berg

Covering what it terms the fight over fees between general practitioners and specialists, this article states that most general practitioners feel their prestige has been threatened by the dramatic, highly paid surgeon . . . that they have been frozen out of the operating room by hospitals that restrict surgery to board-certified specialists . . . that their share of the medical dollar is inequitable compared to the share of specialists. The article discusses the A. M. A.-sponsored Truman committee report in relation to these charges and adds psychologist Ernest Dichter's view that the battle is one of the physician's "inner conflict" between being a humanitarian and making a living.

Redbook, December, 1955

"The Healing of Sharon Webb," by Le Nell Webb

A mother tells of her small daughter's deformity (a congenital hip dislocation), of its eventual correction by orthopedic skill and patience, and of the return of her faith after the birth of another, normal child.

"How Dangerous Is TB Now?" by Alton L. Blakeslee

The public may be underestimating the prevalence of tuberculosis despite its decline as a leading cause of death, the author warns. He advises frequent medical checkups to discover early symptoms.

Woman's Home Companion, December, 1955

"Coming: A Long-Lasting Polio Vaccine," by J. D. Ratcliff

This report describes work being done to provide long-lasting protection against poliomyelitis by doctors in three research laboratories (New York, Ohio, and Alabama). It cites the advantages of a live virus vaccine over the comparatively short-term protection of the Salk vaccine. However, the new-type vaccine is still experimental; full-scale field tests are at least two years away.

Coronet, December, 1955

"A Brother's Gift of Life," by Al Hirshberg

A report of a successful kidney transplant on identical twins.

"Your Doctor Can Add 20 Years to Your Life," by Lawrence Galton

A new medical theory claims that old age and disease need not go hand in hand: A doctor advises how to educate your body to good health and additional years of pleasant living by taking care of six major areas.

Ladies' Home Journal, December, 1955

"What They've Been Learning About Breast Feeding," by Ruth and Edward Brecher

A summary of eight years of patient research on infant nursing provides some interesting answers to why some mothers can't nurse their babies. This surgeon and psychologist (a husband and wife team) compare the lactation cycle of women to that of cows; they offer advice on feeding and nipple care.

"Tell Me Doctor," by Henry B. Safford, M.D.

Dr. Safford discusses stress incontinence or weak bladder control, a complaint from which about 5.5% of all women suffer, he says.

Better Homes and Gardens, December, 1955

"New: A 'Harmless' Germ Killer!" by Donald G. Cooley

When dissolved in water, a new drug named Chlorpactin emits vapors that annihilate viruses, bacteria, fungi, spores and yeast—yet it is so harmless, the author says, that "you could drink it or take a bath in it."

Reader's Digest, December, 1955

"Fastest Man on Earth"

This condensation of a *Time* magazine (Sept. 12) article deals with the experiments of Dr. John Paul Stapp, who was his own guinea pig in determining the effects of speed and stress on the human body.

"How I Conquered Claustrophobia," by Ben Funk

A victim of what is termed the "most common of all phobias" relates how he overcame his fear of crowded and closed-in places. Condensed from the Denver *Post* (Oct. 30).

"They Learn to Survive—the Hard Way," by John G. Hubbell

The author recounts the tough nine days of survival training he underwent, along with 23 air crews, at Stead Air Force Base, Nevada.

"Exciting Promise of the Enzyme," by Harland Manchester

Condensed from *Journal of Lifetime Living* (Dec.), the article tells of research in the enzyme field that holds forth bright promise of aid in controlling malignant growth.

"Super-Aspirins Against Arthritis," by Paul de Kruif

New help for chronic arthritis and rheumatic disease sufferers is offered in reports of a new aspirin-hormone compound. Condensed from *Today's Health* (Dec.).

"The Miracle of Lourdes," by Ruth Cranston

The author of this recently published book reports some case histories of "the cures of Lourdes." (Excerpts from the book appeared in *McCall's* November issue, reported in this column Oct. 29.)

Collier's, Nov. 25, 1955

"The Manikin That 'Breathes' and 'Bleeds,'" by Edward W. Bird, M.D.

A color picture accompanies this feature about the 6-foot, 145-pound synthetic man used as a unique teaching aid for the armed forces. The first of 19 models planned, it took 18 months to build.

Saturday Evening Post, Nov. 19, 1955

"He Gave His Kidney to His Brother," by Virginia S. Herrick

A successful kidney transplant performed one year ago is a "medical first." This is a dramatic story of the 24-year-old Herrick twins, Ronald and Richard. Ronald gave a kidney to save his brother, a victim of nephritis.

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GOVERNMENT SERVICES

AIR FORCE

Symposium on Civil Defense.—More than 60 teaching physicians from 16 medical institutions throughout the nation visited the Air Force School of Aviation Medicine in Texas in November to discuss the role of civilian medicine in defense against war and disaster. The schools participating are affiliates of the Medical Education for National Defense committee, appointed by the Association of American Medical Colleges to acquaint civilian faculties with problems of military medicine and the care of mass casualties in case of a nationwide catastrophe.

The medical educators heard the latest Air Force and Navy findings on such subjects as the effects of radiation, nuclear-powered aircraft, flight fatigue, decompression sickness, and the medical problems of space flight, and they accumulated teaching material to be incorporated into the curricula at their schools. The symposium was the first of an annual series to be held at different air bases. Dr. James R. Schofield, on extended leave from Baylor University's Medical School in Houston, is national coordinator of the MEND organization, which supplies teaching materials and policy guidance to the participating schools.

PUBLIC HEALTH SERVICE

Regular Corps Examinations for Medical Officers.—An examination for appointment of medical officers to the Regular Corps of the United States Public Health Service will be held throughout the country on March 20-22, 1956. Appointments provide opportunities for career service in clinical medicine, research, and public health. Entrance pay for an assistant surgeon with dependents is $6,017 per year; for senior assistant surgeon with dependents, $6,918. Qualified officers are promoted at regular intervals. Benefits other than promotions include periodic pay increases, 30 days annual leave, sick leave, medical care, disability retirement pay, regular retirement pay, which is three-fourths of annual basic pay at time of retirement, and other privileges.

Requirements for both ranks are U. S. citizenship, age of at least 21 years, and graduation from a recognized school of medicine. For the rank of assistant surgeon, at least seven years of collegiate and professional training and appropriate experience are needed. For senior assistant surgeon, an additional three years, for a total of at least 10 years of collegiate and professional training and appropriate experience, are required.

Entrance examinations will include an oral interview, physical examination, and comprehensive objective examinations in the professional field. Application forms may be obtained from the Chief, Division of Personnel, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C. Completed application forms must be received in the division of personnel no later than Feb. 10, 1956.

SELECTIVE SERVICE SYSTEM

Service Prospects for Interns and Residents.—The National Advisory Committee to the Selective Service System reports that the needs of the military services for medical officers from July 1, 1956, to June 30, 1957, will be of such magnitude as to require active duty of all interns and residents who have not satisfied their military liability, and perhaps some liable physicians of priority 3 who are older and who may be established in practice. In view of this it will not be possible to support deferment for any current intern for residency training except those included in the Department of Defense's residency consideration program and perhaps some interns in most exceptional situations necessary to the national health, safety, or interest. Others will be called by Selective Service as needed throughout the year, unless they voluntarily obtain commissions. The President will probably direct the Selective Service System to issue calls for physicians to enter service during the course of the hospital year, possibly in October, 1956, and January and April, 1957.

More Physicians for the Army in February.—The Secretary of Defense has requested the Selective Service System to deliver 297 physicians for induction into the Army in February, 1956.

VETERANS ADMINISTRATION

Evaluation of Mental Care.—The Veterans Administration, which has one of the nation's largest psychiatric patient loads under a single medical management, will make an extensive evaluation of mental patient care to determine what types of treatment and hospitals best promote the improvement or recovery of its psychiatric patients and the relative costs. The study will continue for five years, with probably 15 of VA's 40 neuropsychiatric hospitals participating. Dr. Jesse F. Casey, director of psychiatry and neurology service, said the information to be sought is not now available from any source.

The VA study has three purposes: (1) to determine the relative effectiveness of different treatment techniques, (2) to determine the relative effectiveness of different hospital designs, staffing patterns, and program emphases, and (3) to permit valid estimates of the relative costs of the various elements in effective treatment programs.

Dr. Richard L. Jenkins, a psychiatrist, has been appointed project director with headquarters in VA's Mt. Alto Hospital, Washington, D. C. On the advisory committee are: Dr. Harvey J. Tompkins, director, Reiss Mental Health Pavilion of St. Vincent's Hospital, New York City; Dr. Paul H. Hoch, New York state commissioner of mental hygiene; Dr. George Kelley, professor of psychology, Ohio State University, Columbus; Dr. Frank M. Le Bar, professor of anthropology, Yale University, New Haven, Conn.; and Dr. Morton Kramer, chief, biometrics branch, National Institute of Health, Bethesda, Md.

The cooperating hospitals will collaborate in a general study of admissions for a two-year period. At the time of admission, each patient will be rated as to the type and severity of illness and on other factors important for a forecast of the probability of recovery. These patients will be examined at stated intervals during the following 24 months to determine what improvement they may show and whether they are able to go home. In the intervening periods, records will be kept of the treatment measures used with each patient.

Another phase of the project will be a follow-up of patients after discharge to determine what happens to them after they leave the hospitals. This information is expected to shed light on why patients are readmitted to VA hospitals.

Advisory Research Committee.—An advisory committee on research conducted within the Veterans Administration has been appointed. It includes representatives of specialists in internal medicine, surgery, neuropsychiatry, and tuberculosis. The chairman is Dr. Joseph M. Hayman, Boston; the other members are Drs. J. Burns Amberson, New York; Carol A. Moyer, St. Louis; W. Reece Berryhill, Chapel Hill, N. C.; and Harold G. Wolff, New York City. The committee will be concerned particularly with the professional and administrative aspects of research activities conducted within VA stations and with the research activities conducted by VA employees, and also with their interpretation to the lay public. This committee will maintain contact with the committee on veterans medical problems of the National Research Council that has advised VA on matters of research since it was established in 1945.

Two Fellowships Available.—Two fellowships are available at the Fort Miley Veterans Administration Hospital, 42nd Avenue and Clement Street, San Francisco. These fellowships are by appointment from Stanford University School of Medicine, and each bears a stipend of $300 per month. The appointments are for one year and will be renewable for an additional year. Applicants must be graduates of a class-A medical school, with preference given to candidates who have adequate previous training in clinical medicine. One is a fellowship in cardiology under the auspices of the San Mateo County Heart Association, beginning July 1, 1956; the other is in hematology, beginning on the same date under the auspices of the National Institutes of Health.

DEATHS

Mackie, Thomas Turlay ✦ Westport, Conn.; born in Great Barrington, Mass., May 10, 1895; Columbia University College of Physicians and Surgeons, New York City, 1924; received doctor of tropical medicine and hygiene degree from London School of Hygiene and Tropical Medicine, London, England, in 1931, when he received its Duncan medal; from 1926 to 1929 assistant in medicine at his alma mater, where he was instructor from 1930 to 1933 and assistant clinical professor of medicine from 1938 to 1946; research associate in public health and preventive medicine from 1933 to 1935 and associate from 1935 to 1946 at Cornell University Medical College in New York City; professor of preventive medicine and head of the department from 1946 to 1951, serving as director of the Institute of Tropical Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.; member, subcommittee on tropical diseases, National Research Council; special consultant of the epidemiology division of the U. S. Public Health Service; served during World War I; in 1942 member of the health committee, Office for Relief and Rehabilitation, Department of State, and member of the Army Board for Investigation of Influenza and Other Epidemic Diseases; from 1940 to 1942 consultant in tropical medicine to the U. S. Secretary of War; colonel in the Medical Corps, Army of the United States, during World War II, serving as executive officer of tropical and military medicine, and chief, division of parasitology, Army Medical School; received a medal from the U. S. Army Typhus Commission; in 1946 was awarded the Legion of Merit; consultant and branch section chief, tropical medicine, Veterans Administration, branch four area from 1946 to 1949, when he became area consultant in internal medicine and tropical diseases, Veterans Administration, Atlanta area; member of the American Association for the Advancement of Science, American Clinical and Climatological Association, New York Academy of Medicine, Royal Society of Tropical Medicine and Hygiene, American Gastroenterological Association, and Alpha Omega Alpha; fellow of the American College of Physicians; past-president of the American Society of Tropical Medicine, of which he was at one time councilor and secretary, and the American Foundation for Tropical Medicine, of which he was chairman of the board; served as treasurer of the American Academy of Tropical Medicine; specialist certified by the American Board of Internal Medicine; certified by the National Board of Medical Examiners; served as a consultant to various companies in the tropics and also to the government of Surinam; did extensive survey and field work on parasitic diseases in the Caribbean region; at various times on the staffs of the Norwalk (Conn.) Hospital, Stamford (Conn.) Hospital, Presbyterian, Fifth Avenue, Roosevelt, and Beekman Street hospitals, and the Infirmary for Women and Children in New York City; joint author of "A Manual of Tropical Medicine"; chairman of the Planning and Zoning Commission; died Oct. 5, aged 60, of pulmonary embolism.

Owen, Hubley Raborg, Phoenixville, Pa.; born in Pensacola, Fla., May 8, 1883; University of Pennsylvania Department of Medicine, Philadelphia, 1905; Jefferson Medical College of Philadelphia, 1915; member of the founders group of the American Board of Surgery; at one time instructor in surgery at Jefferson Medical College; emeritus clinical professor of surgery at the Woman's Medical College of Pennsylvania; an associate member of the American Medical Association; member of the American Association for the Surgery of Trauma; fellow of the American College of Surgeons; served during World War I; three times elected president of the International Association of Police and Fire Surgeons and Medical Directors of Civil Service Commissioners, which he helped found in 1921; formerly director of public health, chairman of the local defense council, and chief surgeon of the department of public safety; for 32 years police and fire department surgeon; director of the medical division of the board of education, a post held until 1950, when he became executive director and later president of the Philadelphia Heart Association; consulting surgeon, Philadelphia General Hospital; recently cited by the Health and Welfare Council for "outstanding contributions to health" in Philadelphia; in 1943 received the 20th annual Strittmatter award of the Philadelphia County Medical Society; died in Bryn Mawr (Pa.) Hospital Oct. 8, aged 72.

Bishop, Robert Hamilton Jr., Cleveland; born in 1879; Western Reserve University Medical Department, Cleveland, 1908; director of the joint committee for the advancement of medical education and research of the Western Reserve University School of Medicine and affiliated hospitals; past-president of the Ohio Public Health Association; member of the Ohio State Medical Association; served as president of the American College of Hospital Administrators; at one time city health commissioner; last May was awarded William Freeman Snow medal by the American Social Hygiene Association for distinguished service to humanity; a founder of the National Conference of Tuberculosis Workers and a past member of the board of directors of the National Tuberculosis Association; served as the first full-time executive secretary of the Anti-Tuberculosis League of Cleveland and Cuyahoga County and as president of the Ohio Tuberculosis and Health Association; for many years medical director of the University Hospitals; died in Novelty, Ohio, Sept. 29, aged 76, of arteriosclerosis.

Zavin, William Herman ✦ Portland, Ore.; University of Oregon Medical School, Portland, 1938; certified by the National Board of Medical Examiners; specialist certified by the American Board of Pediatrics; fellow of the American Academy of Pediatrics; past-president of the Portland Academy of Pediatrics; clinical instructor in pediatrics at his alma mater; on the staffs of the Providence, Emanuel, and Good Samaritan hospitals and the Portland Sanitarium; at one time associated with the city bureau of health as director of the communicable diseases section; died in Kirkland, Wash., Oct. 5, aged 43.

Adams, Herman Galusha, Ramona, Calif.; Starling Medical College, Columbus, 1898; died Sept. 15, aged 97.

Blackwell, George Thomas, Gorman, Texas; Chicago College of Medicine and Surgery, 1908; served as mayor, and for many years a member of the school board; died June 13, aged 73, of coronary occlusion.

Bonar, Edward Twinem ✦ Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1947; interned at the Mount Carmel Hospital in Columbus, where he served a residency; died Sept. 28, aged 32.

Carr, Charles Clay ✦ Pennington Gap, Va.; Lincoln Memorial University Medical Department, Knoxville, Tenn., 1915; served during World War I; past-president of the Lee County Medical Society; past-president of the Pennington Gap Lions Club; died in the Harlan (Ky.) Hospital Sept. 29, aged 69, of urinary tract infection.

Case, Carl Judd ✦ Los Gatos, Calif.; Western Reserve University Medical Department, Cleveland, 1910; member of the Ohio State Medical Association; died in the O'Connor Hospital, San Jose, July 8, aged 73, of duodenal ulcer.

Chambers, Merritt Goodrich, Pittsville, Md.; New York Homeopathic Medical College and Hospital, New York City, 1902; died Sept. 10, aged 78, of a heart attack.

Coyle, Bruce James, Windsor Locks, Conn.; Georgetown University School of Medicine, Washington, D. C., 1918; member of the Connecticut State Medical Society; died Aug. 5, aged 65, of coronary occlusion.

DeFuccio, Charles Pasquale ✦ Jersey City, N. J.; University and Bellevue Hospital Medical College, New York City, 1914; specialist certified by the American Board of Pediatrics; member

✦ Indicates Member of the American Medical Association.

of the American Academy of Pediatrics; medical supervisor of schools in Jersey City; on the staff of the Jersey City Medical Center and St. Francis' Hospital; died Oct. 9, aged 66, of coronary thrombosis.

Dick, Noble ✦ Santa Rosa, Calif.; Medical College of the State of South Carolina, Charleston, 1924; on the staff of the Santa Rosa Memorial Hospital; died Sept. 26, aged 63, of pulmonary fibrosis.

Dougan, Archie Longshore ✦ Carmen, Okla.; Kansas City (Mo.) Medical College, 1897; died in Grand Junction, Colo., Sept. 27, aged 86, of pneumonia.

Edrington, Nicholas Kuntz, New Orleans; Vanderbilt University School of Medicine, Nashville, Tenn., 1916; fellow of the American College of Allergists and member of the Louisiana State Medical Society; past-president of the Louisiana Allergy Society; medical examiner for the Orleans Parish school board; for many years an examiner for the induction center of Selective Service; served during World War I; at one time physician for the Louisiana boxing commission; on the staff of the Baptist Hospital; died Sept. 22, aged 65.

Edwards, Francis Main ✦ Cisco, Ill.; St. Louis College of Physicians and Surgeons, 1898; veteran of the Spanish-American and World Wars; for many years practiced in New Baden, where he was president of the Farmers State Bank; consulting surgeon at Centralia for Southern Railway; surgeon-in-chief emeritus at St. Mary's Hospital in Centralia, where he died Oct. 17, aged 79, of myocarditis and arteriosclerosis.

Firfer, Bourke ✦ Chicago; University of Illinois College of Medicine, Chicago, 1938; interned at the Jackson Park Hospital; served a residency at the South Shore Hospital, where he was vice-president of the medical staff, and where he died Oct. 13, aged 42, of cerebral embolus and myocardial infarction.

Fischer, Nathaniel Arthur, Pittsburgh; University of Pittsburgh School of Medicine, 1908; clinical professor emeritus of otology at his alma mater; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staffs of the Eye and Ear Hospital and St. Francis Hospital; died in the W. A. Foote Memorial Hospital, Jackson, Mich., July 28, aged 69, of coronary thrombosis and hypertension.

Flynn, James Lawrence ✦ Natick, Mass.; Georgetown University School of Medicine, Washington, D. C., 1939; specialist certified by the American Board of Ophthalmology; on the staffs of the Boston City Hospital and St. Elizabeth's Hospital; died in the Haynes Memorial Hospital, Brighton, Sept. 26, aged 44, of bulbar poliomyelitis.

Fodder, William Lewis, Schenectady, N. Y.; Albany (N. Y.) Medical College, 1897; an associate member of the American Medical Association; fellow of the American College of Surgeons; honorary staff member at Ellis Hospital; past-president and secretary of the Schenectady County Medical Society; veteran of the Spanish-American War; died Sept. 6, aged 79, of acute bronchitis and arteriosclerosis.

Ford, Walter David ✦ Dearborn, Mich.; Detroit College of Medicine, 1899; fellow of the American College of Physicians; served during World War I; at one time on the faculty of his alma mater; on the staff of the Harper Hospital, where he died Oct. 12, aged 76, of adenocarcinoma of the rectum with metastases.

Freydberg, Max, Mahopac, N. Y.; University of Odessa Faculty of Medicine, Russia, 1915; Howard University College of Medicine, Washington, D. C., 1924; member of the Medical Society of the State of New York; died July 5, aged 62, of coronary thrombosis and arteriosclerosis.

Gale, Clinton Fifield, Georgetown, N. Y.; University of Vermont College of Medicine, Burlington, 1905; member of the Medical Society of the State of New York; died in the Marcy (N. Y.) State Hospital July 30, aged 76, of arteriosclerotic heart disease.

Gerberich, Guy A., Lebanon, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1907; died Aug. 14, aged 72, of cerebral thrombosis.

Gladman, Everett Aldrich, Fulton, N. Y.; McGill University Faculty of Medicine, Montreal, Canada, 1898; medical consultant to the Oswego County Welfare Association; an associate member of the American Medical Association; member of the American Academy of General Practice; past-president of the Oswego County Medical Society; on the staff of the Albert Lindley Lee Memorial Hospital; died in the Syracuse (N. Y.) Memorial Hospital July 18, aged 80, of plasma cell myeloma.

Grimes, James Thomas ✦ Philadelphia; Jefferson Medical College of Philadelphia, 1939; served during World War II; on the staffs of the Frankford and Nazareth hospitals; died Oct. 4, aged 41, of carcinoma of the pancreas.

Gummey, Frank Bird ✦ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1888; an associate member of the American Medical Association; served during World War I; died Sept. 3, aged 88.

Gute, Edwin Bertram ✦ Whitefish Bay, Wis.; Rush Medical College, Chicago, 1926; served during World War I and World War II; in 1916 served in the U. S. cavalry on the Mexican border; health commissioner in Whitefish Bay from 1927 to 1943; health commissioner of Fox Point since 1933 and of Bayside since 1953; member of the American Public Health Association and the American Association of School Physicians; died in Milwaukee July 15, aged 58, of cerebral thrombosis.

Hunter, Rush Quinn ✦ Palestine, Texas; University of Texas School of Medicine, Galveston, 1922; fellow of the American College of Surgeons; chief of staff of the Memorial Hospital; died Sept. 19, aged 57, of coronary thrombosis.

Hutchins, Eugene Leslie, North New Portland, Maine; Medical School of Maine, Portland, 1915; member of the Maine Medical Association; on the staff of the Franklin County Memorial Hospital in Farmington; died Sept. 28, aged 66, of myocardial infarction.

Keim, William W., Davidsville, Pa.; Baltimore Medical College, 1905; past-president of the Somerset County Medical Society; served on the staff of the Memorial Hospital in Johnstown; died Aug. 7, aged 76, of chronic fibrous pancreatitis.

Klein, Benjamin D., New York City; Long Island College Hospital, Brooklyn, N. Y., 1923; died in St. Clare's Hospital Sept. 27, aged 58, of massive gastrointestinal hemorrhage and duodenal ulcer.

Latte, David, New York City; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1904; died in Saratoga Springs, N. Y., July 29, aged 77, of arteriosclerotic heart disease.

Lomnitz, Friedrich Walter ✦ New York City; Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg, Germany, 1918; died Oct. 11, aged 66, of a heart attack.

Lowder, Lillian Crockett, Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1898; died Sept. 19, aged 85, of cardiac decompensation.

MacCracken, S. Gordon, Ashland, Ore.; the Hahnemann Medical College and Hospital, Chicago, 1894; served during World War I; died Sept. 16, aged 85, of arteriosclerosis.

Merwin, Edgar Garfield ✦ Highland, Ill.; Washington University School of Medicine, St. Louis, 1907; for many years served on the board of education and board of health; on the staff of St. Joseph's Hospital, where he died Sept. 30, aged 76, of uremia, hypertension, and arteriosclerosis.

Miller, Victor Davis ✦ Hagerstown, Md.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; served as secretary of the Washington County Medical Society; member and past-president on the staff of the Washington County Hospital, where he died Sept. 21, aged 79, of acute coronary occlusion.

Myers, Harry Edwin ✦ Columbus, Ohio; Starling Medical College, Columbus, 1907; member of the American Academy of General Practice; served during World War I; on the staffs of St. Ann's Hospital, Mercy Hospital, and the Mount Carmel Hospital, where he died Sept. 26, aged 75, of a heart attack.

Opitz, John Hoff ✦ Chicago; Loyola University School of Medicine, Chicago, 1917; on the staffs of the German Deaconess and Southtown hospitals; died Oct. 16, aged 62, of heart disease.

Petty, Clarence Sibley ✦ Guthrie, Okla.; Chicago Homeopathic Medical College, 1897; on the staffs of the Benedictine Heights Hospital; died Sept. 25, aged 83, of congestive heart disease.

Price, Byron Sprague, Port Chester, N. Y.; McGill University Faculty of Medicine, Montreal, Canada, 1895; was a member of the Radiological Society of North America; an associate member of the American Medical Association; died Sept. 17, aged 83, of arteriosclerosis.

Puris, Abram Martin, Park Ridge, Ill.; University of Nebraska College of Medicine, Omaha, 1919; specialist certified by the American Board of Pediatrics; for many years on the staff of the Children's Memorial Hospital in Chicago; died July 15, aged 60.

Rawson, Elwin Gilbert, Anamosa, Iowa; the Hahnemann Medical College and Hospital, Chicago, 1911; for many years health officer; died Sept. 16, aged 70, of coronary occlusion.

Robinson, Edward Jerome, Chicago; Chicago Medical College, 1920; died Oct. 2, aged 80.

Rosenberg, Harry ✦ Chicago; Chicago Medical School, 1929; member of the American Academy of General Practice; on the staff of the Edgewater Hospital; died Sept. 18, aged 57, of cerebral hemorrhage.

Rosenblate, Adolph Jan ✦ Chicago; University of St. Vladimira Faculty of Medicine, Kiev, Russia, 1928; specialist certified by the American Board of Radiology; member of the American College of Radiology; served on the staffs of the American, Englewood, and Evangelical hospitals; died in the Columbus Hospital Oct. 12, aged 61.

Roth, Norman, New York City; Long Island College Hospital, Brooklyn, N. Y., 1906; member of the Medical Society of the State of New York; died Aug. 9, aged 73, of coronary thrombosis.

Sandroni, Dino ✦ New York City; Columbia University College of Physicians and Surgeons, New York City, 1921; member of the National Gastroenterological Association; on the staffs of the University and Roosevelt hospitals; died in the Memorial Hospital Aug. 24, aged 57, of leukemia.

Schipfer, Lloyd Albert ✦ Chicago; State University of Iowa College of Medicine, Iowa City, 1907; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; on the staff of the Wesley Memorial Hospital; died in the Evanston (Ill.) Hospital Oct. 15, aged 71, of thrombosis of the basilar artery and arteriosclerosis.

Sell, Oliver Martin ✦ Pittsburgh; University of Pittsburgh School of Medicine, 1927; specialist certified by the American Board of Surgery; member of the American Society of Anesthesiologists; fellow of the American College of Surgeons; on the faculty of his alma mater; served during World War II; on the staffs of the Suburban Hospital in Bellevue and the Presbyterian and Woman's hospitals; died in Myrtle Beach, S. C., Sept. 22, aged 51, of coronary thrombosis.

Shabat, Louis Willard ✦ Chicago; University of Illinois College of Medicine, Chicago, 1931; assistant professor of surgery at the Chicago Medical School; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; served during World War II; on the staffs of the Mount Sinai, Edgewater, and Cook County hospitals; died Oct. 21, aged 47.

Silverman, Harry Zeleck, Miami Beach, Fla.; Tufts College Medical School, Boston, 1924; an associate member of the American Medical Association; served during World Wars I and II; on the staff of Mount Sinai Hospital; died Oct. 3, aged 57, of coronary thrombosis.

Slavin, Francis James ✦ Sunnyvale, Calif.; University of Cincinnati College of Medicine, 1944; served during World War II and the Korean war; died Sept. 22, aged 37.

Smith, French Nestor, Harlingen, Texas; Eclectic Medical Institute, Cincinnati, 1921; died July 10, aged 64, of cancer.

Smith, James Westphal Barnum ✦ Albion, Neb.; University of Nebraska College of Medicine, Omaha, 1903; served as secretary-treasurer of the Boone County Medical Society; died Aug. 28, aged 78.

Stephens, George Henry, Syracuse, N. Y.; Syracuse University College of Medicine, 1903; an associate member of the American Medical Association; at one time fire and police surgeon; on the staffs of the University and People's hospitals; died in Thousand Island Park, N. Y., Aug. 3, aged 80, of carcinoma of the lung.

Stevens, Delos Meeker ✦ Oskaloosa, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1912; past-president and secretary of the Jefferson County Medical Society; died in the Lawrence (Kan.) Memorial Hospital Sept. 2, aged 65, of cerebral hemorrhage.

Straw, Zatae Longsdorf ✦ Manchester, N. H.; Woman's Medical College of Pennsylvania, Philadelphia, 1890; spent some time in a government hospital for Indians in Idaho before going to Manchester; served in the state legislature; in 1937 received the honorary degree of doctor of science from Dickinson College, Carlisle, Pa.; died Oct. 1, aged 89.

Tingdale, Carlyle ✦ Hibbing, Minn.; University of Minnesota Medical School, Minneapolis, 1938; interned at the Minneapolis General Hospital; health officer and school physician; accidentally drowned in Lake Vermillion Aug. 12, aged 47.

Todd, Lawrence Newton, Berry, Ky.; University of Louisville (Ky.) Medical Department, 1912; member of the Kentucky State Medical Association; served in France during World War I; died July 28, aged 65, of coronary occlusion.

Torrey, John Paine ✦ Bartlesville, Okla.; Harvard Medical School, Boston, 1896; veteran of the Spanish-American War and World War I; on the staff of the Washington County Memorial Hospital, where he died Oct. 1, aged 85, of Buerger's disease.

Trice, Ernest T., Richmond, Va.; University College of Medicine, Richmond, 1911; member of the Medical Society of Virginia; fellow of the American College of Surgeons; from 1937 to 1939 served on the state prison board; served during World War II; on the staffs of the Medical College of Virginia and Grace hospitals; died Sept. 7, aged 67, of metastasis from a Pancoast tumor of the left lung.

Ussher, Clarence D. ✦ Santa Monica, Calif.; University Medical College of Kansas City, Mo., 1896; at one time a medical missionary in Turkey and Armenia; died Sept. 20, aged 85, of chronic endocarditis.

Weeks, Paul Richard ✦ Denver; Indiana University School of Medicine, Indianapolis, 1927; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and American Radium Society; fellow of the American College of Radiology; served during World War II; on the staffs of the Presbyterian Hospital, St. Luke's Hospital, and St. Joseph Hospital, where he died Sept. 20, aged 53, of carcinoma of the pancreas.

Wheeling, William Stuart, Windber, Pa.; Jefferson Medical College of Philadelphia, 1893; an associate member of the American Medical Association; member of the American College of Chest Physicians, American Trudeau Society, and the International College of Surgeons; on the staff of the Windber Hospital; died Sept. 13, aged 82, of myocarditis.

Williams, Frederic Darbey, Valley Falls, R. I.; Columbia University College of Physicians and Surgeons, New York City, 1903; died in the Pawtucket (R. I.) Memorial Hospital Sept. 12, aged 77.

Woolley, Talmage Oliver, Orange, Texas; University of Texas School of Medicine, Galveston, 1911; member of the State Medical Association of Texas; died in the Lutcher Hospital Sept. 21, aged 71, of coronary thrombosis.

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FOREIGN LETTERS

BRAZIL

Pulmonary Syphilis.—Dr. A. Guimarães Barbosa reported on a patient in whom the clinical findings, positive serologic tests for syphilis, and results of the therapeutic test led to a diagnosis of the gummatous form of pulmonary syphilis (*Rev. paulista de tisiol.* **16**:93, 1955). Although acquired syphilis of the lung is regarded by many pathologists as rare, many cases have been reported by clinicians. There is no agreement about its incidence, but there is general agreement about the morbid anatomy seen in the fetus or newborn infant with this condition. In addition to the gummatous form, there is an interstitial pneumonic form. The physical findings are not typical in this form but are those of many other pulmonary diseases. The radiographic findings are likewise inconclusive. The clinical diagnosis is made by serologic tests, therapeutic tests, and by excluding other conditions.

Schistosomal Myelitis.—A fatal case of transverse myelitis of schistosomal origin was observed by Dr. Zacarias Maciel and co-workers of the medical school of the University of Recife. The patient was admitted to the hospital because of total loss of motor control in the lower extremities, incontinence of urine and feces, and a temperature of 100.4 F (38.0 C). Tendinous areflexia with muscular hypotonia and hypesthesia in the lower extremities and a bilateral Babinski sign were noted on examination. The patient died 10 days after admission. At autopsy, microscopic sections of the lumbar region of the spinal cord showed thromboses, hemorrhages, inflammatory reactions, and Schistosoma mansoni ova in direct relation to the lesions. Arteriolar lesions were characterized by necrosis, endarteritis, with edema and leukocytic infiltration, and periarteritis. The nervous tissue in the lumbar region showed severe myelitic disintegration throughout the white matter, ischemic degeneration of the neurons, one small area of gliosis, local destruction of myelin in the radicular branches, and, in one of these branches, the shells of Schistosoma ova.

ENGLAND

Lung Cancer, Polluted Air, and Smoking.—Stocks and Campbell have reported an investigation to evaluate the effects of tobacco smoking and air pollution by benzpyrene acting together on the men in rural North Wales and urban Liverpool (*Brit. M. J.* **2**:923, 1955). The intention was to carry out a five year study, but the results so far obtained have been presented because they point strongly to measures that might help to reduce the incidence of pulmonary cancer. Since 1952 the authors have collected the environmental histories of a number of male residents in the two areas who were believed to be suffering from any form of malignant disease. Reports were also obtained of all deaths certified as due to cancer, and, if no history taken during life was available, a relative was questioned. Supplementary information on the basis of diagnosis, duration of symptoms, and the patients' smoking habits were obtained. About 12,000 histories were also recorded of patients without cancer. Careful analyses of air samples from the areas were made and studied for 3:4-benzpyrene, 1:12-benzperylene, pyrene, fluoranthene, anthracene, and sulfur dioxide. From a previous finding that 4 mcg. of 3:4-benzpyrene can be extracted from the smoke of 500 cigarettes, together with the amount of this substance in air as determined by the same technique, it was possible to estimate what would be the total intake of benzpyrene per year by men of different smoking habits living in rural and urban areas.

The death rates from cancer of the lung and bronchus were calculated among men, aged 45 to 74 years, of different smoking habits, as were the death rates related to the probable amounts of benzpyrene and other carcinogens inhaled from the air. The annual male mortality from lung cancer in the Welsh rural areas increased steadily from 14 per 100,000 for nonsmokers to 363 per 100,000 for heavy smokers (based on a consumption of more than 250 cigarettes a week for 10 years). The corresponding mortality for pipe smokers, irrespective of the amount smoked, was 41 per 100,000. Similar figures were obtained for mixed urban and rural areas, but, in Liverpool, with its greater atmospheric pollution, the mortality rate of nonsmokers was 131 per 100,000 and up to 394 per 100,000 for smokers. Actually, the death rate increased proportionately to the number of cigarettes smoked per week; pipe smokers as a group ranked with cigarette smokers of about 25 a week. The urban rates exceeded the rural rates in every smoking category. The absolute urban excess of deaths was much the same in each smoking group, suggesting that an atmospheric factor is added to the effects of smoking. The authors estimate that 50% of the deaths of Liverpool men from lung cancer arise from cigarette smoking and about 75% of the remaining half are due to a factor only slightly present in the rural areas. The concentration of smoke and 3:4-benzpyrene in Liverpool air was about 10 times as great as that of the rural districts. Benzpyrene is believed to be the carcinogen responsible for the association of lung cancer with both smoking and living in towns.

First Seven Years of National Health Service.—The John Tate Memorial Lecture was delivered before the Middlesex County Medical Society by Dr. T. R. Hill who discussed the lessons learned in the National Health Service since it began seven years ago. He said that the cost of the service was now so high that it had become almost a political issue. The cost was one of the most colossal miscalculations ever made. As medicine advances, costs in publicly organized health service must necessarily increase. The increasing age of the population was not adequately considered, but, because of it, the service will be called on increasingly to deal with the degenerative diseases of later life. Yet, in 1948, the main theme was the economy that would result from the increase in the working strength of a people for whom medical advice and treatment would be freely available. The problem now is how to control rising costs and reduce economic damage to the country. Some form of highly competent central control is necessary. The spread of consultant services all over the country, instead of localization in a few large towns, is of great benefit to the patient, and young physicians are in a better position financially than were their predecessors. Insufficient attention, however, was paid to the general practitioners, many of whom complain that they have lost status and are only routine suppliers of certificates and prescriptions. At present, a physician is not fit to enter general practice on graduation from a medical school. The qualified physician of tomorrow must be more highly trained than he is today. Greater care in selecting medical students should be exercised to insure more competent general practitioners. A raising of the standard of qualification is essential. The general practitioner should have hospital experience under skilled supervision. Too many patients are sent to the hospital, both as inpatients and outpatients. A larger number could be treated at home and hospital beds released for the more needy. Specialists spend too much time seeing outpatients who should not have been sent to them. More money should be spent on home treatment.

Dr. Hill could not understand why the government made so much fuss about overprescribing in general practice, which was a mere bagatelle in comparison with hospital costs (about one billion dollars per annum). Constructive hospital planning has been grossly inadequate. The Central Health Services Council, set up to advise the Ministry of Health, has failed because it was not representative of the medical profession. The profession, not a government department, should choose its own advisory body. There is too great a concentration of power in persons and groups. The central government has given too much responsibility to regional boards without considering the part the profession could itself play.

The items in these letters are contributed by regular correspondents in the various foreign countries.

Hypophysectomy for Diabetes.—In an attempt to arrest the progress of diabetic retinal, vascular, and renal complications, Professor Olivecrona and his co-workers have carried out hypophysectomy on 20 diabetic patients between the ages of 20 and 23 (*Brit. M. J.* **2**:752, 1955). All patients had diabetic retinopathy, elevated blood pressure, and proteinuria. The purpose of the operation was to eliminate those anterior pituitary factors that animal experiments have shown possess a diabetogenic action, as it was thought that these hormones might be connected with the development or progression of diabetic complications. Reports are available on 19 of the patients. Two died within the first postoperative week, and two died within a month, one from thrombosis in the leg and one in an epileptic state presumably caused by hypoglycemia. One patient died 6 months later from progressive mental deterioration associated with arteriosclerosis and not the operation; one 15 months after operation from hypertensive crisis; and one 19 months after operation from renal insufficiency. After the initial postoperative period the patients were given protamine zinc insulin, a diet of 1,400 to 2,000 calories daily, thyroxin, estrogens, or androgens, and desoxycorticosterone, or corticotropin. In the 13 surviving patients the operation was followed by a fall in blood pressure and a decrease in cardiac volume. Where calcification of the peripheral vessels existed before operation of the patients, blood pressure and cardiac volume were not affected, but no calcification occurred in other patients. A definite decrease in proteinuria and in the glomerular filtration rate was achieved, but the effective renal plasma flow was unchanged. This was believed to indicate a favorable effect on the renal circulation. No signs of progression of the renal disease were observed. The renal capacity improved in some patients, and the retinal changes did not progress. Because of the limited period of observation (3 to 43 months) and the small number of patients, definite conclusions could not be reached. However, the high mortality makes the operation a desperate measure. Success is by no means certain, although at the moment no other treatment to arrest complications has anything to offer. Some form of irradiation might be a safer alternative.

Herniorrhaphy as an Outpatient Procedure.—Early ambulation after operations was advocated at the end of the last century and has generally gained acceptance. Impressed with the advantage of early ambulation and the long hospital waiting lists —there are currently 447,000 patients awaiting admission for 76,000 beds in England and Wales—Dr. E. Farquharson decided to perform inguinal herniorrhaphy as an outpatient procedure. Most of his patients had been placed at the end of surgical waiting lists because it was argued that their operation was not urgent. He presented his results in 485 patients whose inguinal hernias were treated in this way (*Lancet* **2**:517, 1955). Had they been admitted in the usual way, they would have filled a 28-bed ward continuously for six months at a cost of $21,000 to $28,000. The operations were carried out under local analgesia without an anesthetist. The patients were little disturbed by the operation. They walked out of the operating room, dressed, and walked to the cars or ambulances taking them home, the aim being to get them back to their own beds before the local analgesia wore off. They were told to spend the next three or four days in bed, with toilet privileges granted, and to return to the hospital in eight or nine days for removal of stitches. Dr. Farquharson uses this procedure only in patients with satisfactory home conditions and provided that the hernia is neither large nor irreducible. The ages of the patients ranged from 12 to 83 years. The best results, judged by freedom from complications, were in the elderly, who prefer the comforts of home. Retention of urine was not noted in any of these patients. The cooperation of the patient's physician was obtained, and he visited in the first few days the patient was home. Arrangements were made for immediate admission in the event of any complications; only 11 of the 485 needed admission for this reason. This was reduced to 1 in the last 200 patients. A follow-up examination suggests that the results are as good as with orthodox hospitalization.

Osler Memorial at Oxford.—On Oct. 8, Prof. G. W. Pickering unveiled a memorial plaque on the outer wall of a house at Oxford in Norham Gardens, which Sir William Osler occupied during his 12 years as regius professor of medicine and in which he died in 1919. Mr. V. Green-Armitage, president of the Osler Club, which provided the plaque, said that he was one of the remaining few who had known Osler and that he had been presented with a prize 50 years ago by Osler. The Osler Club was founded in the early 1920's by a small band of his students. Osler came to Oxford from Johns Hopkins just 50 years ago. The house in which he lived was bequeathed to the university by Lady Osler in 1928 as an official residence for regius professors, but owing to its large size—it had 14 bedrooms—it was not used for a time. The problem was solved by converting it into apartments, one of which would be available to future regius professors. Professor Pickering said that Osler did his best work and researches on diseases of the spleen, blood, and heart in North America. He was successively professor at McGill, the University of Pennsylvania, and Johns Hopkins. Probably no other institution in the world has had such an effect on medical education as Johns Hopkins Medical School. Osler was 56 years old when he came to Oxford. No other personality in the medical world during the present century has had his memory perpetuated in Britain in the same way as Osler. He was a great physician, a great teacher, and a great scholar. It is because he always had time for his students and was a student at heart that the Osler tradition has persisted.

National Health Service in Northern Ireland.—The Northern Ireland General Health Services Board has issued its report for the period 1954-1955 (Northern Ireland General Health Services Board, Seventh Annual Report Year 1954-1955, Belfast, Ireland, Her Majesty's Stat. Off.). The number of persons under treatment by general practitioners in the National Health Service has increased from 1,362,745 to 1,369,115 (98.96% to 99.23% of the total population); the average number per physician decreased from 1,906 to 1,883, mainly because of the increase in the number of physicians in large practices; the number of medical partnerships increased from 122 to 135; and the number of physicians in partnership practice increased from 255 to 282. The medical adviser said that he had found the general standard of accommodation and equipment in physicians' offices to be satisfactory and that many physicians had made improvements. During the year complaints against six doctors were investigated, but only three were substantiated. Twenty-two complaints were dismissed without investigation. The number of patients changing their doctors for reasons other than change of address of physician or patient rose from 1,604 to 20,405.

Influenza in the United States and Great Britain.—Observations on the epidemiology of influenza in the United States and Great Britain have been made by Drs. Davenport, Hennessy, and Francis of the University of Michigan in collaboration with Prof. Stuart Harris of the University of Sheffield. Comparison of antibody levels observed with prototype strains of influenza viruses in serums collected from persons in Sheffield and Michigan showed that similar shifts of dominance of the antigens that comprise group A influenza viruses occurred in both countries at the same time. Levels of antibody to type A strains were much lower in persons in Sheffield. This may help to explain the higher incidence of influenza in Great Britain than in the United States. Since 1932 the annual case fatality rates from influenza in Great Britain have been consistently greater than in the United States. In 1951 there was a severe epidemic in Great Britain but only a mild one in the United States.

Compulsory Hospitalization for Tuberculosis.—The magistrates of Haverfordwest, Wales, have ordered the compulsory hospitalization of a laborer with four children who had not worked for some time and who had pulmonary tuberculosis. A few weeks after this laborer had been admitted to hospital, he had left against medical advice and returned home. Although he was a source of infection, he used public transportation. He refused to return to hospital despite urging by his physician, the district nurse, county health officer, and chest clinic physician. Under the Public Health Act, 1936, the magistrates ordered his removal to the hospital for three months. Although this is the maximum period of detention allowed, renewal of this period can be ordered subsequently if necessary. Although the Public Health Act has been in effect for nearly 20 years, it is seldom invoked.

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Harmful Effects of Exhaust Fumes.—Experts from the poison gas defense station at Porton are collaborating with a panel of investigators appointed by the Medical Research Council to examine the toxic and possible carcinogenetic effect of exhaust fumes from automobiles, trucks, and busses. These fumes may be responsible for the increase in lung cancer, bronchitis, and certain nerve diseases. Benzpyrene has already been found by Dr. A. Lindsey in the deposit from diesel exhaust pipes, and detectable amounts of lead, derived from the tetraethyl lead put in gasoline to stop knocking, have been found in the air. Dr. E. Wilkins of Greenwich is measuring the amount of carbon monoxide derived from gasoline and diesel-driven engines in London streets. Dangerously high amounts have been found in Blackwall Tunnel, which passes under the Thames in East London.

Tuberculosis Due to Resistant Organisms.—McMurdoch and Grant reported on a patient with pulmonary tuberculosis from whom organisms resistant to streptomycin and isoniazid were isolated, although he had received no previous chemotherapy with either drug (*Lancet* **2**:587, 1955). The 20-year-old patient had a sister who had been treated with *p*-aminosalicylic acid alone, streptomycin alone, and isoniazid alone. Nine sputum specimens were all positive for Mycobacterium tuberculosis on culture, and all showed the bacilli to be resistant to streptomycin and isoniazid. The patient was therefore given 2 gm. of viomycin twice weekly and 4 gm. of oxytetracycline daily for two months, when the sputum became negative.

Radioactive Cesium.—Liverpool Radium Institute has received authority from the Regional Hospitals Board to treat patients with radioactive cesium, a by-product of atomic fission. The new therapeutic unit will cost $28,000. The extraction of radioactive cesium is carried out at the atomic energy factory at Windscale. The cesium capsules have an activity of 1 kg. of radium, that is, 1,000 curies. The initial production rate will be one or two capsules a month. The United States is the only other country making radioactive cesium on this scale.

James Parkinson.—On Sept. 17, a memorial plaque to James Parkinson, author of "Essay on the Shaking Palsy," was unveiled in the church of St. Leonard's, Shoreditch, London. Parkinson was also known for his work on political and social reform and on geology. He had the ability to simplify abstract ideas and present them in plain words. Politically he was a Socialist, which is not surprising, as he worked in the slums. The plaque replaces Parkinson's tombstone, which was destroyed in the bombing of London.

Magnetic Call System.—At St. Thomas's Hospital, London, a magnetic call system for contacting resident medical staff is being installed. By this system, which it is believed St. Thomas's is the first hospital to introduce, it is possible to contact a physician in any part of the hospital through signals on a small wireless receiver that is carried in the breast pocket.

FINLAND

Drug Addiction in Finland.—At a meeting of Scandinavian pharmacologists in Helsinki, Professor Möller of Copenhagen, Denmark, stated that, in relation to drug addiction, the term euphomania is preferable to the term narcomania as the former embraces drugs other than narcotics. It covers, for example, the amphetamine group. It is doubtful, however, if either of these terms will altogether replace the term drug addiction. Dr. A. Huhtala, on the staff of a prison in Helsinki, said that in 1939 tablets containing heroin were issued by the Army Medical Service liberally and without strict precautions being taken to prevent abuses. This led to the creation of a number of drug addicts whose histories may be found in hospital and police records. Since World War II there has been a marked decline in the consumption of both heroin and morphine, but Finland's consumption of heroin is still many times greater than that of Denmark. There are about 200 drug addicts in Helsinki and 100 more in the rest of Finland. About one-third to one-quarter of these are women, and about 20 physicians and the same number of nurses and druggists are addicts. In Helsinki several drug addicts have joined forces in order to help each other in securing the drugs they need. There has been a curious shift in the preference shown by addicts for one drug after another. Many begin with heroin, switch to morphine, and end with methadone. At present, methadone has almost completely replaced both heroin and morphine. A morphine or heroin addict can achieve complete satisfaction by switching to methadone, but a chronic methadone addict is uncomfortable if he switches to morphine, even in small doses. These drugs are now almost exclusively taken intravenously, and, when large doses of methadone are given subcutaneously, troublesome sores with sinuses in situ are apt to appear. Among the more than 50 drug addicts examined by Huhtala since April, 1953, there was only one morphine addict—a woman; all the rest were methadone addicts. The most characteristic symptom of methadone addiction is complete sleeplessness. Drug addiction is no longer a serious social problem in Finland, with the possible exception of Helsinki, in one of whose prisons 98 addicts have been treated between 1948 and 1954. Present legislation makes no provision for the compulsory supervision and treatment of drug addicts as such. Legislation against vagrancy may in some cases be invoked in dealing with addicts who may also fall foul of the law by forging medical certificates. There appears to be no serious smuggling of drugs into Finland.

FRANCE

Delirium Tremens.—At a meeting of the Medical Society of Paris Hospitals on June 17, A. Ravina and his co-workers stated that of 2,237 men admitted to the general medical service, 1,500 were alcoholics and that 124 of 300 who came to autopsy had alcoholic cirrhosis. The authors treated 140 patients with delirium tremens. A diet deficient in proteins and fats was a contributing factor. In 10 patients the onset followed a pulmonary infection; in 4 it followed trauma; in 8 it followed sudden abstinence from alcohol; and in 14 no precipitating factor could be found. The prognosis is poor in those who have elevation of temperature, tachycardia, or bradycardia and in patients over 60 years of age in whom there is a drop in arterial pressure. A prothrombin rate below 90% without any other humoral modifications was observed in many of these patients. The authors recommended giving 50 mg. of chlorpromazine two or three times in 24 hours, 10 mg. of strychnine by injection twice in 24 hours, and 10 to 20 cc. of 3% alcohol intravenously. They avoid barbiturates but give alcohol and Phenergan instead. Of their 40 patients treated in this manner, 38 recovered. If there is evidence of cerebral edema, magnesium sulfate and the adrenocortical hormones are given.

Heparin for Cold Abscesses.—In the *Official Bulletin of the Medical Society of Physicians* for June, 1954, Weil and Murat reported that they had injected 50 mg. of pure heparin into a cold abscess. This prevents the caseous liquefaction of the tissues that is provoked by proteolytic enzymes and also the coagulation of the serous exudate. Healing occurs in 15 to 20 days after several injections. The results are better if isoniazid and streptomycin are also used. The heparin permits the antibiotics to penetrate into the center of the abscess even when the abscess is large.

Oxytetracycline for Rheumatic Fever.—J. Billiottet and his coworkers treated 54 patients with rheumatic fever with intravenous perfusions of 300 to 750 mg. of oxytetracycline daily. In children and in serious cases, they have also given cortisone. The results were presented to the Medical Society of Paris Hospitals on June 24. One patient so treated had cardiac complications. Of the 32 patients followed for at least two years, recurrences were observed in only 4.

ITALY

Problems of Oncology.—At the May meeting of the Lombardy Society of Medical and Biological Sciences in Milan, Professor Natale of the Milan Tumor Institute said that of 71 patients in whom hysteroadnexectomies were performed according to Wertheim's method with systematic lymphadenectomy, lymphatic metastases were found in 17% of those in whom the disease was in the first stage and in 33.3% of those in whom

the disease was in the second stage. They were observed, however, only in those in whom the operation was performed two months after the completion of radium therapy and never in those who had not received such therapy. He questions, therefore, whether radium therapy should be advised for women with uterine cancer in early stages. Professor Grattarola of the Cancer Institute of Milan discussed the persistence of the ovarian activity after radium therapy for carcinoma of the uterine cervix. By giving the patients treated with radium appropriate doses of gonadotrophins, he caused persistent vasomotor phenomena to disappear and produced a eutrophic change in the vaginal epithelium and a follicular proliferation, followed by luteinization, in the ovary.

Dr. Bianco, who is also from the Cancer Institute, reported on eight patients with theca cell tumor, which in two was associated with cancer of the endometrium. He emphasized the possibility of a histological differential diagnosis of these tumors from fibromas without histochemical investigations. The nuclei of the cells of these tumors are thicker and bigger and have nucleoli that are more voluminous and more evident than is the case in the nuclei of the cells of fibromas. Professor Sirtori said that the cytological search for neoplastic elements of bronchial origin gives a greater percentage of correct diagnoses when the investigation is made on material secured by expectoration than on that obtained by aspiration of the bronchi. In his studies on the sputum of 36 patients with cancer of the lung, the cytological examination gave positive results in 32 instances, whereas in studies on the material aspirated from the bronchi of 49 patients with cancer of the lung, the cytological examination gave positive results in only 34. The main disadvantages to the use of material secured by bronchial aspiration are that the bronchoscope may not be inserted into the bronchus affected by the tumor and that bronchoscopy may be performed after the tumor cells that were present in the bronchial lumen have been discharged by the patient. On the other hand, all the tumor cells that scale from the neoplasm are gathered and preserved in the sputum and can easily be detected, even if the material is collected on two or three consecutive mornings, as long as it is placed directly into a container with denatured alcohol and if, with this material, histological specimens in paraffin are prepared.

Law of the Heart.—At the June meeting of the Filippo Pacini Medical Academy of Pistoia, Professor Maestrini of Arezzo said that in 1914 he defined the law of the heart as follows: "The heart is capable of performing a greater amount of work when its fiber is lengthened." The new diagnostic means such as cardiac catheterization, angiocardiography, kymography, and the new techniques for operations on the lung and the heart indicate that the heart follows this law any time it has to perform a greater amount of work. In other words, whenever the heart meets with propulsive difficulties, it increases its systolic residuum, becomes dilated, and becomes capable, by means of this dilatation, of increasing its systolic energy and of overcoming, at least in part, the obstacles that block the free passage of the blood. In the clinical field the law of the heart has helped to identify a new means of cardiac compensation (dilatory compensation) and to clarify in the simplest and easiest of ways the origin of cardiac hypertrophy.

SWEDEN

BCG Vaccination.—Since the voluntary BCG vaccination of school children in Stockholm was started in 1943, about 50,000 have been so treated. In 1941 there were 23 deaths from tuberculosis among Stockholm's children, aged 0-15, whereas there was not one such death in the same age group in 1952. In the same period tuberculosis morbidity among school children dropped from 3.9 to 0.7 per 1,000. Reviewing these and other findings in the quarterly journal of the Swedish National Association against Tuberculosis, Dr. Herbert Enell gives BCG vaccination some of the credit for these figures in view of the fact that a comparison of tuberculosis morbidity among the vaccinated and nonvaccinated is greatly in favor of the former. Thus, of 3,112 children successfully vaccinated, only 7 developed tuberculosis, and then always in a mild form (a rate of only 0.5 to 1 per 1,000 yearly), whereas among 843 not vaccinated with BCG, 328 developed tuberculosis (a rate of 10 to 40 per 1,000 yearly).

Grouping the school childrens' homes in three different social classes, Enell concluded that the parents' decision for or against vaccination was not influenced by their position in the social scale. With regard to the frequency with which BCG vaccination should be repeated, he has found that 91.6% of the children vaccinated at the ages of 7 and 8 were still tuberculin-positive nine years later. He suggests that this vaccination be given at birth, on entering school or leaving school, and on commencing military service.

In *Svenska läkartidningen* for Sept. 9, 1955, Dr. Erik Jacobsson compared subcutaneous and intracutaneous injections of BCG. Giving the same preparation of BCG by subcutaneous injection in 382 and by intracutaneous injection in 278 subjects, he found that the incidence of necroses at the site of the injection was much greater after the subcutaneous than after the intracutaneous injections. Subsequent testing of both groups with tuberculin showed little difference in the reactions to it.

Appendectomy at Gynecologic Operations.—The routine practice of removing the appendix in the course of gynecologic operations was shown to be fully justified by an investigation of 523 gynecologic operations reported by Angervall and Hesselsiö in *Nordisk medicin* for July 21, 1955. The authors excluded from their study patients in whom there were clinical signs of appendicitis at the time of the gynecologic operation. The removed appendixes were subjected to Weigert-Hansen staining, supplemented in most cases by hematoxylin-eosin staining for the determination of eosinophilia. Pathological changes were found in 60%. In 38 cases (7.3%) histological changes indicative of acute appendicitis were found; the largest pathological group consisted of 117 cases (22.4%) showing fibrous obliteration of the lumen of the appendix; in 24 cases (4.3%) eggs of Enterobius vermicularis were found in the lumen of the appendix without any concomitant sign of appendicitis; in the 3 cases in which the appendix was found to be the seat of cancer, the primary new growth was situated in the uterus or ovary; and in one case there were tuberculous changes in the appendix. As the appendectomy had no deleterious effect on the postoperative course of any of these patients, this investigation gives full support to the practice of removing the appendix whenever a surgeon finds it convenient.

Medical Jubilee.—Sweden created a medical service in 1688, and its members were required not only to act as general practitioners but also as health officers with administrative responsibilities. In this dual capacity many a physician had occasion to complain that the state was a niggardly employer. After nearly two centuries of experience with the state as an employer, the members of this service banded together in July, 1880, to form an association to further the material interests of its members. In August this association celebrated the 75th anniversary of its founding. At present, there are about 350 appointments in this service, with a senior member for each county. The senior member is responsible for the health of his county and supervises the activities of his subordinates and those of the pharmacists in his district. Recruiting for this service has encountered difficulties due in part to the rival offers of other services. The physician who becomes a health officer in the far north of Sweden may not be in so enviable a position as his colleague who works in a hospital with a well-equipped laboratory.

URUGUAY

Poliomyelitis.—At a meeting of the National Academy of Medicine, Perez and his co-workers reported studies of serum from subjects aged 8 months to 20 years. They found that 95% of subjects examined had antibodies against at least one type of poliomyelitis virus. At the age of 4 years, 72% of the urban population was found to have antibodies against at least one type of virus. Natural immunity is developed earlier and more completely in those living in the country than in those living in the city. The type 3 virus is most prevalent in Uruguay. Among the urban children, those visiting the country in the summer develop a higher immunity than those visiting the seaside.

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CORRESPONDENCE

MEDICOLEGAL OFFICE

To the Editor:—From a study of case material passing through the coroner's office of the county and city of San Francisco, Dr. Turkel in THE JOURNAL, Aug. 27, 1955, page 1485, concluded that "the ultimate in scientific accuracy and in the discharge of responsibility to the public" by the office of coroner or medical examiner requires that office to perform autopsies in between 23 and 25% of all deaths occurring in its jurisdiction. By so doing, an official medicolegal autopsy would be performed in every death known or suspected to have resulted from violence, as well as in every death that has occurred unexpectedly from unexplained causes. It would undoubtedly be desirable to secure the kind of factual evidence in all deaths from unexplained or presumably violent causes that can only be obtained by autopsy. For that matter, it would be desirable from the standpoint of preventive medicine, medical research, and medical education to have such information about all deaths, regardless of the clinical impressions of their causation. In some jurisdictions, such as the city and county of San Francisco, public policy apparently condones by statute and supports by the allocation of public funds the performance of compulsory autopsies in virtually all deaths due to violent or unknown causes. Not all cities and counties are so enlightened and prosperous, nor do all cities and counties have a sufficient number of medicolegally trained pathologists to carry this large volume of medicolegal autopsies. In these latter communities, and they probably constitute a substantial portion of the total in the United States, it is necessary to take steps to achieve a reasonably satisfactory improvement rather than "the ultimate" in this branch of government. It is believed by many experienced medicolegal pathologists that the interests of justice and public safety require compulsory official autopsies in approximately 25% of all deaths referred to the office of the average coroner or medical examiner. This would comprise about 5% of all deaths. Beyond this figure it is felt that the law of diminishing return operates and that the cost per case mounts rapidly for the discovery at autopsy of each previously unsuspected murder or hazard to public health. If the cost of medicolegal examinations is to be held at a level that will insure the acquisition of such facts as are necessary to prevent the criminal prosecution of any citizen because of inadequate or incompetent medical evidence, and will insure that relatively few murders or previously unsuspected hazards to public health will pass unrecognized, the funds allocated to the office of coroner or medical examiner should be sufficient to employ expert pathologists to perform autopsies in at least 25% of all violent or unexplained deaths.

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To the Editor:—It was gratifying to notice that the lead article in the Aug. 27, 1955, issue of THE JOURNAL was devoted to forensic medicine. I read the article by Dr. Henry W. Turkel, "Evaluating a Medicolegal Office," with a great deal of interest. Noteworthy is the first sentence in which is stated: "There is wide and general agreement that 20 to 25% of all deaths require medicolegal investigation." Dr. Turkel continues by defining an "autopsy index," which is:

$$\frac{\text{"no. of medicolegal autopsies}}{\text{total deaths in the community}} \times 100\text{"}$$

In his article he states further that the autopsy index in states with adequate statutory provisions should range between 20.7 and 25. In other words, he advocates an autopsy in every coroner's or medical examiner's case although he cited various medicolegal authorities who feel that, in general, 20% of all cases coming into a medicolegal officer's jurisdiction require autopsies. This is greatly different from 100%. While autopsies in as many as 50% of all medicolegal cases, as defined by Dr. Turkel, may be desirable in urban areas with a large transient population, such as New York City, there is no reason to believe this is necessary or desirable for the country as a whole. There are many instances where a complete autopsy would yield little evidence of medicolegal importance that could not be determined from a careful examination of witnesses, the scene of death, and external examination of the body. Such evidence would almost certainly stand up in most courts. It is well recognized that a coronary occlusion may be the proximate cause of an automobile accident, but why perform an autopsy on the passengers? An occasional victim of suicide may be suffering from organic brain disease. But is it in the public's interest to go to the expense of performing autopsies in all cases of suicidal death, especially when the fact of suicide is well documented with an obvious cause of death and a bona fide suicide note? It is also difficult to understand that an autopsy on an 85-year-old patient who died in a hospital with a well-established cause of death several weeks after falling and breaking a hip would produce sufficient additional evidence of medicolegal importance to justify the expense to the government. Certainly a postmortem blood sample or spinal fluid sample should usually be obtained for analysis for alcohol. These should be obtained in all medicolegal cases except in the very young. I do not mean to belittle the importance of performing autopsies in all cases where there exists a possibility of criminal liability of another, where trauma of unknown origin exists, where there was no known medical attention recently, or where there were no competent witnesses to the death and the attending physician is unable to ascribe a known cause. In such cases an autopsy is mandatory, of course. It is my experience, however, that many highway fatalities and true suicides, and some sudden and unexpected deaths from natural causes do not require an autopsy. In these cases the cause of death can be ascribed with reasonable accuracy. However, I may not be so much at variance with Dr. Turkel as this may appear depending on our definitions of an autopsy. By autopsy I mean a complete investigation of the head, thorax, abdomen, and other regions as the circumstances may require. To my mind, an autopsy is not merely an examination of the external appearance of the body, nor minor procedures such as obtaining a sample of a body fluid for chemical analysis. I doubt the public benefits significantly from increasing the autopsy rate from between 20 and roughly 50% of all medicolegal cases, as exists in such areas as New York City, New Orleans, Baltimore, Cleveland, and the state of Vermont, to 100% as Dr. Turkel suggests. This would cause the expenditure of a great deal more public funds although from a scientific viewpoint there is no doubt that something can be learned from all autopsies.

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THE CANCER PATIENT

To the Editor:—I have read many articles on whether to inform a patient he has cancer, but most seem to miss the point. In my opinion the patient with a possibly curable cancer should almost always be told in order to make him understand the reason for treatment, which often causes considerable discomfort. No one knows how he will react to a given situation beforehand. Conclusions based on questionnaires inquiring how one would wish to behave under a hypothetical situation are not valid. The only real problem is in the situation where the malignant disease is hopeless. I have almost always found that if I wait the patient will never ask me "Do I have a cancer?" If he does, I answer him honestly, but most of these people have a good idea of what is causing their illness and do not wish to have us close the door.

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MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Aortic Stenosis: A Clinical Study. M. B. Matthews, W. E. Medd and R. Gorlin. Brit. M. J. **2**:759-763 (Sept. 24) 1955 [London, England].

The authors report on 50 patients, between the ages of 9 and 76 years, with aortic stenosis. There were 31 males and 19 females. The condition was congenital in 6, rheumatic in 20, and of undetermined origin in 24. The incidence of rheumatism was greater in the female than in the male patients. Twenty-one of those with aortic stenosis of undetermined origin were men. Enlargement of the left ventricle was revealed by fluoroscopy in 44. The brachial arterial pressure pulse was recorded in 39 patients; the measurement of the systolic upstroke time from the end of the diastole to the final sustained peak of the systole was greater than 0.15 second in 37 patients. One of the remaining two patients had minimal stenosis, while no explanation was found for the normal upstroke time in the other. In the presence of the characteristic harsh systolic murmur, maximal either in the aortic area or in the suprasternal notch, the severity of the stenosis was established by evidence of the left ventricular hypertrophy, and it was supported by a systolic upstroke of more than 0.15 second in the brachial arterial pressure tracing. The critical aortic valve area appears to be of the order of 0.5 sq. cm. in isolated aortic stenosis and is variably larger when there is coexisting aortic incompetence. Comparison of the natural history of aortic stenosis with that of mitral stenosis shows that in the former there is a long symptomless period and, when left ventricular failure occurs, a short period of severe symptoms until death, but at any moment sudden death may occur. In the latter there is a comparatively long period of severe symptoms and the downhill progress is marked by exacerbations that are often associated with attacks of bronchitis, with pulmonary infarction, or with pregnancy. The problem of selection of patients for valvulotomy is more difficult than in mitral stenosis, since severe aortic stenosis is often compatible with an active life, and when left ventricular failure eventually occurs the valve may well be so abnormal as to prohibit an effective valvulotomy. At present, the operative mortality is high and the long-term results are unknown.

New Antidiabetic Principle: Results of Clinical Studies. H. Franke and J. Fuchs. Deutsche med. Wchnschr. **80**:1449-1452 (Oct. 7) 1955 (In German) [Stuttgart, Germany].

A new sulfonamide preparation N_1-sulfanilyl-N_2-n-butylcarbamide (BZ 55) was given a trial in healthy persons in whom it caused pronounced fatigue, sweating, sensation of hunger, tremor, and a certain euphoria. Blood sugar determination showed definite hypoglycemic effects. The drug then was given to 50 patients with diabetes mellitus. In diabetics who were not treated with insulin, delayed depression of the blood sugar level resulting from the administration of BZ 55 caused considerable reduction or complete subsidence of glycosuria. As a rule, the same results were obtained in diabetic patients treated with insulin. BZ 55 failed in diabetic patients who did not show an easy response to insulin or in those in whom diabetes mellitus was made worse by associated febrile diseases such as pulmonary tuberculosis. With a diabetic diet, or even with an unrestricted diet, it was possible to discontinue the administration of insulin entirely or partly. The authors believe that the effect exerted by BZ 55 depends on the blockade of the A-cells of the pancreas causing a preponderance of the homorganic insulin in the B-cells. Apparently one does not deal with a toxic side-effect of the drug but with an improvement in the disturbed metabolism. Initial large doses of BZ 55, i. e., 1 gm. three times daily for several days, should be given orally; treatment may then be continued with a maintenance dose of 1 to 1.5 gm. daily. Undesirable side-effects were not observed with these doses.

An Effective Peroral Antidiabetic Drug (BZ 55). F. Bertram, E. Bendfeldt and H. Otto. Deutsche med. Wchnschr. **80**:1455-1460 (Oct. 7) 1955 (In German) [Stuttgart, Germany].

N_1-sulfanilyl-N_2-n-butylcarbamide (BZ 55) was given a therapeutic trial in 82 patients with diabetes mellitus varying in degree of severity and in duration. The drug was administered in tablets of 0.5 gm. and, because of the delayed onset of its hypoglycemic effects, 5 tablets were given on the first day of treatment, 3 tablets on the second day, and 2 tablets on successive days, and this at first without consideration of the duration and severity of the diabetes mellitus, the patient's body weight, and the conditions of absorption. A therapeutically effective blood sugar level was obtained with these doses in most of the patients. In 28 diabetic patients between the ages of 49 and 77 years, who had been treated exclusively by dietetic measures, constant glycosuria of more than 100 gm. per day subsided completely within a few days of treatment, and simultaneously there occurred a rapid depression of the fasting blood sugar level of from 300 mg. per 100 cc. to below 150 mg. per 100 cc., as well as a definite lowering of the daily profile with maximal values below 200 mg. per 100 cc. After a 10-day course of treatment, it was possible to discontinue the administration of the drug in several patients on a strict diet whose metabolism remained balanced for four months of follow-up. Three patients with mild acidosis without signs of precoma were treated with high doses of BZ 55 up to 5 gm. daily for several days, but without effect on the high blood sugar level, the high glycosuria, or the acetonuria. In 38 diabetic patients between the ages of 41 and 77 years who had been treated with insulin in doses up to 88 units daily, administration of this drug was discontinued abruptly and administration of BZ 55 was instituted with the previously mentioned schedule, and occasionally with 5 tablets on the first day and 3 tablets not only on the second but also on successive days. In 28 of the 38 patients, BZ 55 proved to be a complete substitute for insulin, although the metabolism occasionally became unbalanced temporarily in the course of the first days of the treatment; in the remaining 10 patients decompensation occurred, sometimes immediately and sometimes after one to two weeks, requiring reinstitution of insulin therapy. In 10 diabetic patients between the ages of 15 and 40 years, BZ 55 was ineffective. Tolerance of the drug was good without exception. There were no undesirable side-effects, except for a definite sulfonamide dermatitis in three patients in the course of the first three days of the treatment and a generalized pruritic rash on the 12th, 13th, and 20th days after the start of the treatment in three other patients. As a result of their experiences, the authors feel justified to state that BZ 55 is the first antidiabetic drug that is definitely effective when given orally. Exact dietetic measures are as indispensable to the use of this drug as to that of insulin. Further experiences are required regarding mechanism of action, width of indications, optimum dosage, and possible side-effects. Routine use of BZ 55 must be postponed until the results of extensive trials now in progress at several clinics are known.

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The place of publication of the periodicals appears in brackets preceding each abstract.

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A Concept of Diabetes. W. P. U. Jackson. Lancet **2**:625-631 (Sept. 24) 1955 [London, England].

Jackson shows that, apart from the clinically obvious glycosuria, ketosis, and hyperglycemia, diabetes is an innate obscure disorder of carbohydrate metabolism, which manifests itself in curious diverse ways such as in the hypertrophied islets of overweight stillborn babies, in microaneurysms in the retina, in cardiac infarction in the female, and in excessive tallness in the child and obesity in the mother. The cause of diabetes is not known nor is its real relation to growth and size understood, but apparently diabetes in the latent form ("pre-diabetes") remains with the victim years or decades before he or she becomes overtly diabetic. During this time, pregnancy, corticotropin therapy, acquisition of adrenal cortical hyperfunction (Cushing's syndrome) or of acromegaly, a micrococcic (staphylococcic) infection, or overeating may uncover the individual already predisposed to diabetes. The previously adequately compensating pancreas cannot stand the additional stress completely, and evidence of the latent diabetic state is brought to the surface, divulging its menacing presence by embryopathies or changes in carbohydrate tolerance. Hence it is wrong to talk of diabetes only when glycosuria and hypercalcemia are present. It is a disorder that goes back much further than that—even into the womb. Pregnancy is a dangerous stress to the pancreas. That it is diabetogenic to the mother is evident from the worsening of the hyperglycemia and the retinopathy during pregnancy in a woman with established diabetes; from the appearance of retinopathy for the first time during pregnancy, and its disappearance after parturition; from the occasional appearance of hyperglycemia and glycosuria in a nondiabetic, which disappears after parturition; from the hypertrophied pregnancy pancreas; from the rarity of diabetes in the post menopausal woman who is childless; and from the potentiation of the diabetogenic effect of cortisone and alloxan in laboratory animals. That pregnancy is diabetogenic also to the fetus is demonstrated by the fact that the infant of the diabetic mother is often stillborn, oversize, and overweight. Such a baby is also red, fat, flabby, edematous, and weak. It respires with difficulty and has hepatomegaly, cardiac hypertrophy, erythroblastosis, and hyperplasia of the islets of Langerhans. The abnormal internal uterine environment of the prediabetic woman may also produce either a stillbirth, due to excessive size and other defects, or a child who grows too tall and has an abnormal vascular system and a tendency to the development of diabetes. With regard to the recognition of the prediabetic woman, the author says that, starting with a very large baby or an unexplained stillbirth, it is often possible to detect whether prediabetes in the mother was the cause by testing the glucose tolerance of mothers after childbirth. There is considerable evidence that children, before becoming diabetic, grow excessively in both size and weight. The author also comments on diabetes and obesity in middle age, the role of the growth hormone, of insulin, and of the glucocorticoids.

SURGERY

Congenital Aneurysm of the Right Aortic Sinus Associated with Coarctation of the Aorta and Subacute Bacterial Endocarditis: Ante-Mortem Report of a Case. I. Steinberg and N. Finby. New England J. Med. **253**:549-552 (Sept. 29) 1955 [Boston].

The occurrence of an unruptured aneurysm of the right aortic sinus in the presence of subacute bacterial endocarditis, aortic regurgitation, and coarctation is described in a 27-year-old woman who was admitted to the New York Hospital in New York City, because of congenital heart disease that had been discovered shortly after birth. For the first 12 years she was well. At the age of 20 the patient had subacute bacterial endocarditis and was treated successfully with penicillin for two weeks. Nine months before her admission to the New York Hospital she had a second attack of subacute bacterial endocarditis and was treated at another hospital with penicillin and streptomycin for seven weeks. When she was first admitted to the New York Hospital, roentgenograms of the chest were made and angiograms in the left anterior oblique view were taken that showed marked hypertrophy of the left ventricle, coarctation of the aorta, prominent collateral arterial branches, and a saccular aneurysm of the right aortic sinus, measuring 2.2 cm. in diameter. Because of fever and persistent moderate leukocytosis, the patient was treated with large doses of penicillin for two weeks and discharged to her home, where she continued to notice easy fatigability and had dyspnea with moderate exertion. Two months later she was digitalized because of episodes of nocturnal dyspnea, and this early sign of heart failure warranted her readmittance to the hospital for surgical treatment. With the aid of hypothermia, the coarcted segment of the thoracic aorta was excised and an end-to-end anastomosis was made with the aid of a Pott clamp. The pulsatile aneurysm was seen and palpated; its size conformed to that shown by the angiocardiogram. Repair of the aneurysm did not appear advisable because of the presence of severe aortic regurgitation. The systolic murmur along the left sternal border, which had been heard preoperatively, disappeared after the operation. There was postoperative lowering of systolic blood pressure and increased blood pressure in the legs. Three months after the operation, the patient felt well and her exercise tolerance was improved. Although not enough time has elapsed for proper evaluation of the result, the authors' case, which was diagnosed during life, suggests that, in uncomplicated cases, particularly before rupture compromises the heart, surgical treatment is feasible through the right cardiac chambers.

The Results of Direct Vision Closure of Ventricular Septal Defects in Eight Patients by Means of Controlled Cross Circulation. C. W. Lillehei, M. Cohen, H. E. Warden and others. Surg. Gynec. & Obst. **101**:447-466 (Oct.) 1955 [Chicago].

The authors describe the techniques utilized and the observations made on the first eight patients in whom ventricular septal defects were closed by open cardiotomy utilizing total bypass of the heart. Controlled cross circulation provides a reliable method for excluding the heart and the lungs from the circulation for prolonged periods. It consists of the simultaneous reciprocal exchange of equal quantities of compatible blood from the arterial system of the donor to the patient's arterial circulation and from the caval system of the patient to the veins of the donor. The donor's circulation has to oxygenate and revitalize the venous blood received from the patient. A pump is essential to control accurately this continuous interchange of blood between patient and donor. Technical factors in the clinical application of cross circulation are described in detail, with particular reference to the cannulation, anesthesia, and selection of compatible donors. Eight patients, all of whom were seriously ill with ventricular septal defects, cardiomegaly, and pulmonary hypertension, had their circulatory systems linked with a suitable donor, their hearts and lungs totally bypassed, and a right ventricular cardiotomy carried out to permit direct vision suture of their ventricular septal defects. All operations were carried out at normal body temperatures. The hearts and lungs of these eight patients were totally bypassed for from 5 to 26½ minutes, during which time the patient's body was perfused at reduced rates of flow based upon the azygos flow experimental studies. These reduced rates of flow have been demonstrated to be safe. There were two deaths in these first eight patients. Both involved infants, occurred 4 and 11 days after operation, and were caused by respiratory complications, to which these patients are particularly susceptible. Disturbances of the conduction systems, such as ventricular fibrillation or persistent complete heart block, did not occur, although all defects were closed by direct sutures placed in the ventricular septum with no effort being made to avoid the so-called vulnerable areas. Experimental observations indicating that the heart, euthermic and totally bypassed, needs only a very reduced coronary arterial flow to remain well oxygenated were verified in man. Furthermore, such a heart becomes very resistant to arrhythmias. Such possible complications as air embolism, excessive hemolysis, or postoperative hemorrhage have been completely absent. Recatheterization of four of the six surviving patients from four to nine months after operation revealed that the septal defect was completely closed and that no shunt remained. In two of these patients, the pulmonary pressure has returned to normal. The four patients represent the first to receive complete correction of ventricular septal defects, with disappearance of murmurs and thrills and closure of the shunt.

Survival After Lung Resection for Bronchial Carcinoma. J. R. Bignall and A. J. Moon. Thorax **10:**183-190 (Sept.) 1955 [London, England].

Bignall and Moon studied the duration of life after lung resection for bronchial carcinoma and the effects of various factors on survival in a group of 531 patients treated at hospitals for diseases of the chest between 1940 and 1951. Four hundred fifty-three survived the early postoperative period. Their chance of surviving one year was 63%, two years 47%, and five years 33%. The two and five year rates for those reported to have squamous tumors was 52% and 36%, compared with 34% and 26% for those with undifferentiated growths. The apparent involvement of the mediastinal nodes at operation had a considerable influence on the survival. The two and five year rates for those without enlarged nodes were 61% and 48%, but for those with enlarged nodes the rates were only 27% and 11%. The prognosis appeared to depend to some extent on the location of the tumor. The highest survival rates were observed with cancers of the right upper lobe, the two year rate being 57%; the left upper and right lower lobes had similar though slightly lower rates, but the two year rate with cancers of the left lower lobe was significantly lower, being only 36%. No regular pattern of survival in relation to age was detected. The prognosis was better in women than in men. The survival rates were lower in those with symptoms for six to eight months than in those with either shorter or longer histories. The differences in survival rates after pneumonectomy and lobectomy could be largely attributed to the smaller proportion with involved mediastinal nodes among those having a lobectomy. The operative mortality decreased from 19% between 1940 and 1946 to 10% in 1950 and 1951.

NEUROLOGY & PSYCHIATRY

The Probable Influence of Salk Poliomyelitis Vaccine on Reported Poliomyelitis in North Carolina. B. G. Greenberg and C. M. Cameron Jr. North Carolina M. J. **16:**391-395 (Sept.) 1955 [Winston-Salem, N. C.].

From the official records of poliomyelitis reports in the files of the division of epidemiology of the North Carolina State Board of Health during the five-year period of 1950 to 1954, an attempt was made by the authors to predict, within certain limits, the total number of reported paralytic and nonparalytic cases of poliomyelitis that might be expected in the state. In an average year, there will occur in North Carolina a total of 630 reported cases of poliomyelitis of all types. Of these 630 cases, 350 are expected to manifest some degree of paralysis. In a low incidence year, one may expect 409 cases of all types, of which 226 will be paralytic. In the course of a high incidence year, 987 cases are predicted, of which 551 will be paralytic. From the report of Dr. Thomas Francis of the University of Michigan on the 1954 field trial of the Salk vaccine, the authors attempted to predict what influence the use of the vaccine will have on the above-mentioned anticipated incidence of poliomyelitis. The 630 cases of all types that might be expected in the average year would be reduced to 321 if every person in the state received a complete immunization with the Salk vaccine and the effectiveness were the same in all age groups of those studied in the 1954 field trial. In like manner, the 350 paralytic cases that are anticipated in the course of the average year could be reduced to 98 if 100% of the population were successfully inoculated. These estimates are based on the Francis report findings that the vaccine is 49% effective against all types of poliomyelitis, not effective against nonparalytic poliomyelitis, and 72% effective against paralytic poliomyelitis. The use of Salk vaccine among all first and second grade school children only would reduce the 630 cases of all types of poliomyelitis expected in the average year to 576, the high figure of 987 to 914, and the low figure of 409 to 368. The 54 cases of paralytic poliomyelitis expected in these age groups in an average year could be reduced as low as 15 if every first and second grader received the vaccine. Therefore, this would reduce the total number of paralytic cases expected in the average year from 350 to 311. A recent survey by the North Carolina State Board of Health showed that less than half the counties in the state plan to offer second inoculations before the opening of school, and early reports from counties offering vaccine indicate that from one-fourth to one-third of the eligible children have responded to the invitation to a second dose of vaccine. The authors conclude that there is every reason to believe that the use of the Salk vaccine among some first and second grade school children will have little influence on the poliomyelitis rates recorded in the state of North Carolina in 1955. It may be suggested that even widespread inoculations among hundreds of thousands of residents of North Carolina may have no statistical impact on the disease for several years to come.

Acute Poliomyelitis in Infants Under One Year of Age: Epidemiological and Clinical Features. H. Abramson and M. Greenberg. Pediatrics **16:**478-488 (Oct.) 1955 [Springfield, Ill.].

Of a total number of 3,510 cases of poliomyelitis that occurred in New York City in the course of 1949 and 1950, 92 occurred in infants less than one year old, of whom 52 were boys and 40 were girls. Comparison of the epidemiological and clinical features of poliomyelitis in these infants with those in children and adults revealed that clinically recognizable poliomyelitis was of infrequent occurrence among infants less than one year old. It was even more infrequent among infants in the first six months of life. This is in marked contrast to the findings in the 1950 epidemic in Israel, where one-third of all cases occurred in the first year of life and one-tenth in infants in the first half year of life. Infant boys exhibited a greater susceptibility to the disease than girls. Eight of the 92 infants died, a high mortality rate of 8.7%; fatalities were particularly high among infants less than 3 months old, with some predominance of deaths in boys. Nonparalytic forms of poliomyelitis occurred infrequently among the infants less than one year old, especially in the first six months of life. Paralytic forms of the disease were dominant, spinal involvement being more common than bulbar. Deaths occurred chiefly in infants with the bulbar form of poliomyelitis, as in older children and adults. The mortality rate was higher in infants than in older children and higher than in patients of all ages combined. The onset of poliomyelitis among infants less than one year old was variable; it was acute, with fever, fever with nuchal spasm, or the triad of fever, nuchal spasm, and spasm of back muscles. Temperature at the onset of illness averaged 98.3 F (36.8 C), with a low of 97.6 F (36.3 C) and a high of 102 F (38.8 C); subsequent temperatures were higher, the mean being 102.8 F (39.3 C). The interval between onset of illness and first detection of paralysis averaged 5.5 days, with a spread from the day of onset to 25 days later. Paralysis of a single limb occurred more frequently than of two or more limbs, and the ratio of arm to leg paralysis was about 1 to 3. Initial spinal punctures in infants less than one year old were made on an average of 3.4 days after the onset of the disease in nonparalytic cases, and 5.7 days in paralytic cases. The spinal fluid was usually clear, with a mean count of 91 lymphocytes per cubic millimeter. The average sugar content was 55 mg. per 100 cc. of fluid, and protein, 72 mg. per 100 cc. of fluid.

PEDIATRICS

Mumps Encephalitis: Pathology and Pathogenesis. W. L. Donohue, F. D. Playfair and L. Whitaker. J. Pediat. **47:**395-412 (Oct.) 1955 [St. Louis].

The characteristic central nervous system lesion found in two cases of fatal mumps encephalitis was an acute perivascular demyelinization similar to that seen in the other postinfectious encephalitides. Reports in the literature of mumps encephalitis with a fatal termination are few, and even fewer are the cases in which a histological study of the nervous system has been made post mortem. A case previously reported by one of the authors (W. L. D.) in 1941 and another observed in 1954 are therefore presented together. The first of the authors' patients was a 5-year-old girl who died three days after admission to the Hospital for Sick Children, Toronto, Canada; the second was a 14-year-old boy who died suddenly two days after he was admitted in coma to St. Catharines General Hospital. The lesions in these two cases were essentially the same and were

similar to those described in the few unequivocal cases contained in the literature. The incidence of neurological complications in mumps cannot be accurately estimated, because mumps is largely a benign disease of childhood treated at home and data for all the home cases are not available. Clinical involvement of the nervous system, however, is not rare and may be manifested in a variety of ways. The most familiar of these is the so-called meningitis or meningoencephalitis, which is characterized by an increase of cellular elements, chiefly lymphocytes, in the cerebrospinal fluid. This pleocytosis of the cerebrospinal fluid may or may not be accompanied by symptoms and signs of encephalitis or meningeal irritation. The mumps virus is also responsible for a significant number of cases of so-called "acute aseptic meningitis," in which there is no clinical evidence of parotid, testicular, or visceral involvement. These may be confused with nonparalytic poliomyelitis. Myelitis, polyneuritis, and neuritis limited to one or more nerves have occasionally been reported and may cause permanent damage; usually, however, the paresis or paralysis is transient and recovery is complete. Evidence is accumulating to support the belief that mumps encephalitis is caused by the mumps virus itself, probably as a result of either an augmentation or enhancement of its neurotropic properties or a particular susceptibility of the nervous tissue in certain persons.

Tay-Sachs Disease in two Sinhalese Children. C. C. de Silva and G. E. Tennekoon. Brit. M. J. **2**:768-770 (Sept. 24) 1955 [London, England].

Two cases of cerebromacular degeneration of Tay-Sachs type are described in Sinhalese boys, aged 2½ and 2 years when admitted to the Children's Hospital in Colombo, Ceylon. The children showed mental retardation, myoclonic fits, blindness with a dark purple patch at the fovea centralis surrounded by a white halo of avascular degenerated tissue, and primary optic atrophy. In one patient, the disease started at 2 months of age and the duration of the disease was two years and eight months; in the other patient, the disease started at the age of 2 years and its duration was only two months. Autopsy was performed in both cases and microscopic examination of the brain revealed swollen ganglion cells with a foamy cytoplasm and a small nucleus, which had been described previously by other workers. The only unusual feature in one case was the presence of large hyaline masses undergoing calcification in some parts of the brain substance and in the piarachnoid. The nature of these changes is unknown. The infantile type of Tay-Sachs disease has been described by other workers in Swiss and Norwegian children, and there is no longer any reason to state that Tay-Sachs disease arises almost exclusively in Jewish infants.

Contribution to the Study of the Immune Response Following Antidiphtheritic Vaccination by the Percutaneous Route. G. Santopadre and L. Poli. Clin. pediat. **37**:483-490 (July) 1955 (In Italian) [Bologna, Italy].

Results of experiments on rabbits indicated that it was possible to obtain a state of antitoxic immunity against diphtheria by applying pads of adhesive plaster containing diphtheria anatoxin in a dose equal to 50 Lf to the shaved back of the animals. The application of similar pads containing more anatoxin (100 Lf) to the unbroken skin (patch vaccination) of 10 children who had never been vaccinated against diphtheria had no effect. The same studies on 16 children, who had been vaccinated three to six years earlier and in whom the reaction to Schick's test was markedly positive, revealed that the reaction had become negative in all of them and that the serum antitoxin level was increased. Studies on 34 children, of whom only 23 had been vaccinated in the second year of life but in whom the reaction to Schick's test was positive, revealed that the patch vaccination had no effect in the 11 children who had never before been vaccinated and in 3 vaccinated children who had shown no acquired reactivity before the pads (three pads were applied at a 10 day interval) were applied. The reaction to Schick's test became negative only in those vaccinated children in whom a certain degree of acquired reactivity was present before the patch vaccination. The different behavior of the immune response of the rabbits and the children to the patch vaccination was probably due to the fact that the anatoxin dose was not sufficient to bypass in man the threshold limit essential to stimulate an immune movement in persons never before vaccinated and also to the fact that, despite all precautions taken, it was difficult to avoid the production of a solution of continuity in the skin of the rabbits while shaving them. The doses were sufficient, however, to reawaken and reestablish an immune process in those children in whom, because of a previous vaccination, there still was, even if only in the subliminal state, a certain degree of acquired reactivity. Thus, although this new method cannot replace the standard antidiphtheritic vaccination, it can be useful if it is used for the recall vaccination. In fact, the antidiphtheritic vaccination that the Italian laws make compulsory for all children in the second year of life confers an immunization that lasts for an average of two to three years. This immunization period can be prolonged if a new dose of vaccine (recall vaccination) is given in the following years. The authors suggest that this new method be used instead of recall injections, which are more painful and more disagreeable to the children.

UROLOGY

Adenocarcinoma of the Kidney. G. W. Briggs. Australian & New Zealand J. Surg. **25**:53-61 (Aug.) 1955 [Melbourne, Australia].

The 100 consecutive cases of carcinoma of the kidney presented were compiled from the records of several Melbourne hospitals. No case was included unless the diagnosis had been proved microscopically. A large number of cases with strong presumptive diagnoses were thus rejected. The triad of pain, hematuria, and mass was present in only 25 cases. The commonest single symptom was hematuria, this being present in 55 patients. In 17 instances, the hematuria was an isolated event before presentation at hospital, while 38 patients had experienced periodic episodes of blood in the urine. Pain was nearly as frequent as hematuria, being a feature in 52 cases. Loss of weight was a common symptom. In nine instances, the presenting symptom was due to a secondary manifestation. In four of this group, there were bony metastases and in two, cerebral metastases. The presenting feature in one patient was a lump in the neck, while the last presented dyspnea due to pleural effusion. Thirty-seven patients were hospitalized without symptoms relating to the renal tract. A palpable abdominal mass was present in 16 of these patients, and, in 8, carcinoma of the kidney was correctly diagnosed. The diagnosis of abdominal carcinoma, primary site unknown, was made in five, and malignancy was not suspected in the three others. Malignancy was likewise not suspected in 11 of the 21 patients in whom no palpable mass was present. Thus, of the 37 patients with no renal history, 14 reached autopsy with no prior clinical suspicion of malignancy. Autopsy was done in 48 cases, and metastases were found in 35 of these. At autopsy, it was quite common to find a small tumor 1 to 3 cm. in diameter, but a tumor of this size was seldom seen at operation. Metastases are often present before nephrectomy is performed for an apparent local clinical lesion. The prognosis of the patient with this lesion is not improved by early surgical ablation. The malignancy of renal carcinoma is emphasized.

Subtotal Cystectomy in Treatment of Atony of the Bladder. F. J. Götzen. Ztschr. Urol. **48**:577-583 (no. 9) 1955 (In German) [Leipzig, Germany].

Götzen differentiates three forms of bladder atony: the neurogenic form, the decompensatory or mechanically induced form, and the myoneurogenic or congenital form. In the neurogenic form, in which all of the musculature controlling expulsion is atonic, even extensive resection of the mobile parts of the bladder will produce little improvement. Subtotal cystectomy is indicated chiefly in the myoneurogenic form of bladder atony and in patients in whom, after removal of the mechanical obstruction and prolonged bladder drainage, incomplete evacuation with a large amount of residual urine persists. The technique of subtotal cystectomy is comparatively simple. It was first suggested by

Orr in 1937 and subsequently has been used by a number of other urologic surgeons. Whereas some advise rigorous reduction of the size of the atonic bladder, others advocate a two-thirds resection. The author removes a little over half of the organ. After extraperitonealization of the bladder, its movable parts, the vertex and the lateral and anterior walls, are mobilized and pulled forward by means of a clamp attached to the vertex. Two lateral holding sutures at the level of the zone of resection facilitate the handling after the size of the organ has been reduced. Closure is done with the aid of a purse-string suture, and turn-in sutures, placed over it, further reduce the capacity of the bladder and secure the closure. The author used this method successfully in three patients. The subtotal resection improves the function of the bladder and greatly reduces the residual urine.

INDUSTRIAL MEDICINE

Pulmonary Disease in Relation to Metallic Oxides. K. M. A. Perry. Lancet **2**:463-468 (Sept. 3) 1955 [London, England].

If the oxides of metals are inhaled into the lung and remain in its lymphatics they will throw x-ray shadows, the density of which varies with the atomic weight of the metal. Some dusts are dissolved and are excreted by kidney or intestine, but others remain and cause shadowing. Though they may be inert and may not give rise to fibrosis, they may interfere with elasticity. Exposure to barium peroxide occurs in the manufacture of paints, fireworks, dyes, inks, depilatories, insecticides, rat poisons, glass, and linoleum and in the rubber industry. Exposure to the dust of barium peroxide in association with silica occurs during mining, and it produces the densest nodular lung shadows yet recorded. Pulmonary opacities have also been observed after the use of Pitressin snuff for diabetes insipidus, barium peroxide serving as the base for this snuff. Exposure to iron dust and fumes occurs in welders, oxyacetylene cutters, polishers, tool makers, cutlery makers, foundry workers, and hematite miners. The last two occupations involve exposure to iron dust and fumes associated with silica, and in consequence silicosis is a recognized risk in iron foundries and mines. A benign pneumoconiosis may develop in workers who inhale tin oxide dust. Although tin may be deposited in the lymphatics of the lungs, it does not give rise to fibrosis. Silver polishers use rouge that is iron oxide and are thus exposed to a dust consisting of a mixture of silver and iron. There is little doubt that part of the x-ray changes seen in these workers is caused by silver. The oxides of manganese, beryllium, vanadium, and osmium can all cause a chemical pneumonia. The sarcoid caused by beryllium is discussed in greater detail. Cadmium dioxide produces an unusual form of central emphysema, associated with impairment of respiratory function. While most workers in contact with aluminum dioxide dust have not been harmed by this exposure, severe pulmonary fibrosis, which caused some fatalities, has been reported in Germany and Canada, but these cases remain a mystery. Pulmonary carcinoma is observed in miners who have contact with arsenides. Thus diverse patterns of pulmonary disease may result from exposure to dust and fumes of metallic oxides. When the dust and fumes are extracted from the air in the factory and passed through chimneys into the atmosphere, the prevalence of pneumonia has been known to increase in the neighboring population; in people living near beryllium factories, sarcoidosis has been reported. Deaths in London after the dense fog on Dec. 8, 1952, have been attributed to acute bronchitis and its complications resulting from the inhalation of the dioxide and trioxide of sulfur extruded by factory and domestic chimneys.

Low Backache in Industry: Review of 1,163 Cases. R. N. Wilson and S. Wilson. Brit. M. J. **2**:649-652 (Sept. 10) 1955 [London, England].

Five years of experience at an ironworks with 1,163 men employed in heavy industry showed that suffering and absenteeism caused by low back pain can be greatly reduced if all cases, even trivial ones, are treated promptly by relaxation and manipulation. The methods used are admittedly empirical, but the uncertainty surrounding the exact causes of backache fully justifies the use of such methods, especially when they are effective. The patients' complaints vary from a dull low backache to acute stabbing pains in the back and/or buttock, groin, thigh, leg, and foot. Most patients are able to walk into the physiotherapy department, but a few are treated as stretcher cases by first-aid workers before being sent in. The routine treatment is begun by placing the patient in the prone position with a thin pillow under the hips and another at the head. This should give comfort even in the most acute attack. Infrared therapy is administered for 20 or 30 minutes, and the patient is encouraged to relax and to sleep if he wishes. Massage is then applied, beginning with light effleurage and gradually deepening into kneading. Full relaxation soon follows, and manipulation can then easily be performed if necessary, without anesthesia or sedation. The patient is advised concerning posture, especially when sitting, and the avoidance of incorrect lifting and of attempting to touch his toes; he is supplied with 6 codeine tablets to be taken two at a time during the next 24 hours, and he is encouraged to report again the next day if pain returns. This routine is most successful in acute attacks treated within 12 hours of onset. Injury to the sacrospinalis and other muscles, sometimes found in traumatic cases, may be treated with strapping as well as heat and massage, chiefly to give a feeling of support and to remind the patient to treat his back with care. No pressure is brought to bear on the men to remain at work, but most of them are advised to do so. Use of the term slipped disk, with its suggestions of operation and permanent transfer to less remunerative light work, is avoided for psychological reasons. A diagnosis of fibrositis, lumbago, sciatica, myalgia, or strained back or muscles, however, is acceptable, because almost everyone knows of someone who has had such a condition and has recovered completely. Simple urine tests and a straight x-ray film also have a psychological value. It is interesting to note that cold wet weather increases not only the pain of chronic backache, but also the actual number of traumatic cases. Furthermore, the first hour at work on a cold, wet morning is often the time when acute attacks occur. The loss to both employer and worker when an experienced man has to be permanently transferred to light work on account of backache is so great that every effort should be made to restore him to normal health as quickly as possible. The success of the method described, which represents an attempt by a general practitioner and a physiotherapist to deal with the problem of backache, is shown by the fact that in 1954 only 11 cases of back injury resulting in an absence from work of more than three days were reported to the factory inspector, out of a working population of 5,000; only five of these were traumatic in origin, although there were 122 traumatic cases in all.

THERAPEUTICS

Studies on the Metabolism of a New Salicylic Derivative: Ortho-Ethoxy-Benzamide (Etosalicil). F. Ducco, S. De Vercelli and R. Strobbia. Gazz. med. ital. **114**:93-99 (May) 1955 (In Italian) [Milan, Italy].

The authors report the results of studies on the metabolism of a new salicylic derivative, ortho-ethoxy-benzamide ("Etosalicil" or ethyl-salicylamide), which has the advantages over the other known salicylic derivatives of being less toxic, having a greater antirheumatic, antipyretic, and analgesic activity, and at the same time being better tolerated by the patients. They made their studies on the urine of two children with rheumatic infection who received the drug in daily doses of 3 and 4 gm., respectively, with good results and of a 29-year-old woman with rheumatic pyelosis, which developed after a mitral commissurotomy, who received the drug in daily doses of from 6 to 12 gm. orally plus 2 gm. in suppositories. The results indicated that the metabolism of the drug differs from that of salicylic acid and salicylamide. In fact, while most of the former is eliminated as such by the kidney and most of the latter is excreted as glucuronide and sulfuric ether or gentisates, about 50% of the new derivative is eliminated as soluble compounds of salicylamide (30%) and as ortho-ethoxy-benzoic acid (20%). The absence of carboxyls (acids) or free phenolic groups accounts for the complete absence of gastric disturbances during the administration of this drug and for its lesser toxicity.

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BOOK REVIEWS

Cardiac Emergencies and Heart Failure: Prevention and Treatment. By Arthur M. Master, M.D., Cardiologist, Mount Sinai Hospital, New York, Marvin Moser, M.D., Assistant Physician in Medicine, Montefiore Hospital, New York, and Harry L. Jaffe, M.D., Assistant Attending Physician, Cardiology, Mount Sinai Hospital, New York. Second edition. Cloth. $3.75. Pp. 203, with 14 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1955.

In this second edition, the authors have included many of the newer drugs that have been used to treat cardiac emergencies. This is a well-written, impressive little volume which deals with practically all the emergencies encountered in the treatment of cardiovascular disease. While it does not pretend to be a textbook on cardiology, it does cover the cardiac emergencies thoroughly and specifically. The arrhythmias are well described, and the accepted methods of treatment are specifically outlined, including the exact dosages of all the drugs recommended. The selection of drugs is usually discussed when there is a choice, and the authors' preferences are stated. Acute pulmonary edema and congestive heart failure, the treatment of angina pectoris, coronary insufficiency, coronary occlusion, and anticoagulant therapy are well discussed and presented in an understandable fashion. Many of the rarer emergencies and conditions difficult to diagnose are also described in a practical manner. The section on cardiac arrest is one example of clear, thoughtful writing that should be valuable to one who is not familiar with such an emergency. This book has been kept down to pocket size. Its form and content are excellent, and it should greatly benefit any physician who is likely to encounter cardiac emergencies or patients with heart failure. It also should be of great value to medical students, interns, and residents.

Ciba Foundation Colloquia on Ageing: Volume I: General Aspects. Editors for Ciba Foundation: G. E. W. Wolstenholme, O.B.E., M.A., M.B., and Margaret P. Cameron, M.A., A.B.L.S. Assisted by Joan Etherington. Cloth. $6.75. Pp. 255, with 38 illustrations. Little, Brown and Company, 34 Beacon St., Boston 6, 1955.

In July, 1954, the third Congress of the International Association of Gerontology was held in London. Taking advantage of the availability of many authorities on the problems of aging, the Ciba Foundation at the suggestion of Prof. R. E. Tunbridge invited a number of investigators to attend a workshop session as guests of the foundation the week preceding the congress. That this decision was worthwhile is readily apparent in this report. The first meeting was planned to be a general exploration of the present state of experiments now in process dealing with the changes occurring in human tissues with the passage of time. To keep the content of the discussions informal, the size of the group was limited to 39, of whom 9 were from the United States. Following the opening remarks by Chairman Tunbridge that wisely avoided the semantic pitfalls in which the terms "geriatrics" and "gerontology" unfortunately are involved, the discussions were concerned with aging as a general phase of human existence. This provocative book raises a far greater number of questions than it answers. Although the infinite variety of biological activities going on in the human body at different rates and in different ways make it difficult to establish a common dominant theme, the editors have chosen wisely in the limitation of the topics they selected as a starting point for comments from the members of the group. Senescence is defined after which pathological changes, mental aspects, alterations in respiration, endocrine phases, and problems of nutrition are discussed. The contributions by Lewis on the mental aspects, Lansing on elastic tissue, and McCay on nutrition are particularly stimulating. One of the most valuable features is the discussion at the end of each chapter. Much of the material presented is speculative, and many important aspects of aging could not be included. Even so, this volume should prove helpful to those interested not only in the minutiae of aging but also in practical points of value to the clinician. The publishers deserve the thanks of biologists and the medical profession for presenting an attractive readable book.

The Postural Complex: Observations As to Cause, Diagnosis and Treatment. By Laurence Jones, B.S., M.D. Cloth. $9.75. Pp. 156, with 79 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1955.

Laurence Jones, a surgeon with considerable experience and a special interest in static and postural problems related to the feet, presents the theory that pronation of the feet under weight-bearing produces a forward tilt of the pelvis, exaggerates existing curves of the spine, and thereby produces neuralgias, not only in the lower back but also in the thoracic and cervical regions. Part 1 deals with postural change and evolutionary adaptations but contributes little if anything to the support of the author's theory. It is little more than a review of material that is covered during a first year course on embryology and anatomy in medical school.

Part 2 deals with causes and mechanisms, and in it the postural complex is explained and illustrated schematically by an elaborate diagram. It concludes that "since the central nervous system is a continuous structure, tension in one area must be transmitted in varying degree to all others. Conversely, for the same reason, relaxation of tension may cause corresponding release at distant points." The chapter on radiographic measurements of pelvic position is clear and well illustrated. The importance of making anteroposterior and lateral views with the patient in the standing position is rightly emphasized, and a method for measuring inequality of leg lengths and determining the angle of the pelvic tilt is described. Having explained "that serial distortion of the entire superstructure is triggered by primary internal rotation of the foot," Jones devotes a chapter to synchronized internal rotation of the lower extremity. In addition to the text, it includes a number of diagrammatic explanations of the mechanics and several photographs illustrating the effects of rotary movements of the feet on the alignment of the legs and knees. The author reminds us that the major neurovascular bundles lie close to the inner border of the calcaneus and suggests that descent of the sustentaculum occurs with angular compression of the blood vessels and nerves.

Part 3, on postural history and physical examination, is clearly written and well illustrated, but after one has read through this, he may wonder what has happened to the rest of the patient, since it deals only with his feet, legs, and back.

Part 4 is concerned with treatment. It contains chapters on the suitable shoe—reinforcement and outside correction, the individual inside adjustment of the suitable reinforced shoe, adjuvant therapy, and the correction of foot and body posture in children. The use of rigid shoes with steel shanks and long counters and the use of a plastic reinforcement to form a sort of inside counter or shell are recommended. In addition, most of the inside and outside corrections in common use today are described. Adjuvant therapy is discussed only briefly; this includes bed rest with bilateral balanced (Russell) traction for back pain followed by diathermy and massage and the use of the whirlpool bath for relief of foot and leg pain. The author believes that cortisone, corticotropin, and their derivatives materially shorten the treatment periods. Regarding the treatment of children, the author says that "although there are certain differences, basically the correction of children's shoes resembles adult techniques. . . . High shoes, except for dress purposes, have been chosen as the suitable shoe for children under the age of six." These are reinforced with plastic material and sponge rubber inserts of various types. Correction of intoeing and outtoeing is accomplished by use of training straps attached to reinforced shoes. The author presents a statistical analysis of 500 cases of chronic low back pain from different sources and discusses these briefly. The table is most difficult to evaluate because the symp-

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toms are classified on a general basis such as fatigue, leg aches, and upper root pain, and the results are designated "substantial benefit" and "failures." The histories and examinations leave many questions unanswered in the minds of the reader. On the basis of the data given, it is impossible to arrive at a critical evaluation.

Faulty body mechanics have been related to pains from the feet to the skull by most orthopedists who followed the suggestions of Goldthwaite and his associates since 1934. In "Essentials of Body Mechanics in Health and Disease," page 22, they state, "In the slender type . . . the body inclines backward from the low lumbar region, increasing the lumbar lordosis and the forward inclination of the pelvis, with an increased rounding of the mid- or upper dorsal region and a forward projection of the neck: . . . In the lower extremities the knees are often hyperextended and the *feet pronated and strained*." Shands in his "Handbook of Orthopaedic Surgery" described faulty posture thus, "The head protrudes, the shoulders are rounded and drooped, the chest is flat and the thoracic spine has an increased posterior convexity. The lumbar lordosis is exaggerated and the abdomen is protuberant; particularly in the lower half. *The pelvic inclination is increased. The knees are slightly flexed and the feet are pronated.*" Therefore, although most orthopedists recognize the frequent association of pronated, painful feet with certain types of back pain (postural), few will accept Jones' theory that pronated feet are the basic cause of faulty posture and of most neuralgias of the back and legs. Many will also question use of rigid shoes with reinforcements plus other inside and outside corrections as the sole treatment for pronated feet in adults and children.

Jones' book is an interesting exposition of his own theories. It should be used for reference only and only by those with wide experience and critical judgment.

Surgery of the Stomach & Duodenum: A Handbook of Operative Surgery. By Claude E. Welch, M.D., D.Sc., Visiting Surgeon, Massachusetts General Hospital, Boston. Second edition. Cloth. $9. Pp. 370, with 79 illustrations by Muriel McLatchie Miller. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1955.

The popularity of this handbook of operative surgery is attested by the demand for a second edition. The original format has not been changed, and there has been no significant revision of the material presented in the first edition, but new subjects have been added which enhance the value of the book. Of particular interest is a brief historical summary of the development of gastric surgery. The newer operations for duodenal ulcer, including tubular resection and extensive sleeve resection, are presented, as well as replacement techniques used after gastrectomy. Brief comments on subjects of current interest, such as the revival of interest in the Billroth 1 procedure and immediate gastric resection as the treatment for the acutely perforated ulcer, are also included. The important feature remains an accurate description of the technical aspects of gastric and duodenal operations, with discussion kept to a minimum. A good bibliography is included. This handbook should be a welcome addition to the library of all surgeons interested in this field, and it is highly recommended to all surgical residents.

Medical Problems of Old Age. By A. N. Exton-Smith, M.A., M.D., M.R.C.P., Physician, Whittington Hospital, London, England. With foreword by Rt. Hon. Lord Amulree, M.A., M.D., F.R.C.P. Cloth. $7. Pp. 331, with 17 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; John Wright & Sons, Ltd., 42-44, Triangle West, Bristol 8, England, 1955.

Leadership in important medical fields has been demonstrated many times by members of the profession in Great Britain. As early as 1922, Sir Humphry Rolleston in his Linacre Lectures recognized the increasing importance to the medical profession of the afflictions and deteriorations that are the common experiences of many older persons. Since Rolleston discussed medical aspects of old age, there has been a growing awareness of this field. Although articles and monographs on selected phases have been published, no textbook dealing specifically with the vexing medical problems of older citizens has previously appeared in Great Britain. This concise practical treatise on the diagnosis, management, and general considerations of health maintenance and medical service for the growing number of the elderly is an attractive handbook with an excellent index. In the foreword, Lord Amulree emphasizes the comparative newness of geriatrics and points out that in the past too many elderly patients have not received adequate treatment. It appears that in Great Britain, as in the United States, physicians as a group have not informed themselves of the specialized nature of the health and medical needs of the elderly. Here, then, is an informative and helpful workbook that tells how the sympathetic, resourceful physician may solve medical problems of the aged. The first chapter outlines the clinical implications of aging. Succeeding chapters discuss general principles of diagnosis, the maintenance of health, home care, and rehabilitation. Next, the disorders of the major body systems are interpreted. The final chapter reviews the common mental disorders that occur in Great Britain. They are pretty much the same as those found in the United States. The absence of a discussion of the new tranquilizing drugs is not a serious omission since, as yet, exact indications for their use and their scopes of effectiveness have not been determined. The roentgenograms and other illustrations are well selected. The author is to be congratulated on this contribution, and the publisher is to be commended for the excellence of the format, readability, and general arrangement of the material.

Psychiatry and the Law: Edited by Paul H. Hoch, M.D., New York State Psychiatric Institute, and Joseph Zubin, Ph.D., New York State Psychiatric Institute, New York. Proceedings of forty-third annual meeting of American Psychopathological Association, held in New York City, June, 1953. Cloth. $5.50. Pp. 232, with 3 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W.C.1, England, 1955.

This book has the same title as a textbook twice its size by Guttmacher and Weihoffen published in 1952. It is hoped that readers will not confuse the two. Because the book is a report of proceedings, it lacks the complete coverage and continuity of a textbook. The papers reprinted in this collection, however, are scholarly presentations, and most of them are well worth reading. Perhaps most interesting to those psychiatrists and lawyers faced with the problem of the defense of insanity in criminal cases are the discussions by Davidson, Abrahamsen, Roche, and Barshay. The test used in most states today when insanity is interposed as a defense to a criminal act is the rule established in the M'Naghten case in England in 1843. Great strides have been made in the field of psychiatry since that time, and the continued use of this century-old concept has often been cited as a perfect example of the lag between scientific advancement and the law's acceptance of such advances. The above discussions, presenting both sides of the issue, show that there are still grave doubts as to the wisdom of abandoning a concept that has aided the administration of justice pretty well for over 100 years. As valid studies in this field appear, a better understanding between exponents of law and psychiatry is bound to result.

How to Live 365 Days a Year. By John A. Schindler, M.D., Chairman, Department of Medicine, Monroe Clinic, Monroe, Wis. Cloth. $3.95. Pp. 222. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, 1954.

This book written for the laity describes the causes and treatment of emotionally induced illnesses. Despite the vast literature on the psychosomatic element in many diseases, there is much in this book that should be of value to the average clinician. The style is fairly lucid, although at times there is a tendency to use technical terms that do not belong in a popular treatise. For example, why "cicatrix" rather than "scar?" Such lapses fortunately are few, and every point is concretely illustrated with an apt case history. As in many other books aimed at self-help, the principles expounded, sound though they are, are very difficult of application, and one is left with the feeling that, in addition to the sound advice given, many of these patients would have been further benefited or would have achieved relief sooner if they had been given definite instructions in how to relax their voluntary muscles. The author emphasizes his most important points by repeating them in summaries at the end of each chapter and in a "final blueprint" near the end of the book. This is followed by a short chapter for physicians explaining in more detail the author's views, how he arrived at them, and how he applies them in his practice. There is an index. As a book to give to patients with emotionally induced illness, this is one of the best.

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QUERIES AND MINOR NOTES

ACNE AND CHRONIC HEPATITIS

TO THE EDITOR:—*A 28-year-old man has had chronic hepatitis for three years. It had an insidious onset, and its progress is marked chiefly by a progressive increase of bromsulphalein retention, which is now 20% in 45 minutes. One factor responsible for this progress is a severe cystic acne vulgaris of the back. The patient had acne prior to the hepatitis, but this had cleared completely two years before the onset of the hepatitis. Six months after the onset of the hepatitis, the acne recurred in a more severe form. Is there a factor in the hepatitis responsible for this increased severity that can be treated? Is hormone medication to be considered?*

Howard L. Gordon, M.D., Hillside, N. J.

ANSWER.—The acne vulgaris in this patient may be secondary to the exacerbation of the chronic hepatitis rather than vice versa. When acne is present in chronic hepatitis, antibiotic therapy, which will also reduce the organisms in the intestinal tract, should also be utilized. Thus, any one of the broad spectrum antibiotics in moderate doses might be useful. Neomycin could also be added to reduce the intestinal flora. On occasion, cortisone, hydrocortisone, or corticotropin have been of help in chronic hepatitis, and their efficacy should be tested in such cases.

DENTAL CARIES

TO THE EDITOR:—*In my pediatric practice, several patients have asked about the following advice given by dentists for children with severe caries, namely, that they must eliminate all sweets from the diet including fruits and other naturally occurring sugars. One mother actually was in tears after trying to prepare a diet eliminating all carbohydrates. 1. Are sugar and other carbohydrates of primary importance in dental caries. 2. What sort of a diet would be advisable yet practical? 3. Does not heredity play a major role in dental caries?*

M.D., California.

ANSWER.—The problem of dental caries has been vigorously attacked by research and clinical investigators with no final answer of single etiology nor prophylaxis yet available. Answers given here conform to findings of more than one investigator in each case. 1. Sugar as a substrate for acidogenic fermentation in the mouth is of importance in the caries-susceptible individual. As "sugar" particular reference is made to glucose and sucrose separately or in prepared foods. Polysaccharides allow fermentation-degradation productive of acid at a much slower rate. Ninety per cent of the caries reduction accomplished by sharp limitation of all carbohydrates has been accomplished by removal of monosaccharides and disaccharides. 2. Complete elimination of carbohydrates from the diet is untenable, and as in the correspondent's case, virtually impossible. An advisable diet for such a caries-susceptible child should be free of jams, jellies, candy, heavily sugared beverages, canned (sweetened) fruits, sweetened pastries, and canned peas or corn. Recent confirmed evidence of caries activity during and for about 15 minutes after each feeding correlate well with higher caries activity in those who spend greater time in feeding either by slow eating, or frequent, between-meals supplements. Glutinous foods result in greater caries activity than those of thinner consistency by their prolonged apposition to the tooth. These two factors have made it worth while to advise caries-susceptible individuals to brush teeth, or at least rinse the mouth thoroughly after each meal. An excellent, simple, and explicit dietary is available (Dietary Program for the Control of Dental Caries, Ann Arbor, Mich., Overbeck Company, 1951). 3. Heredity does play a major role in dental caries, but until man exhibits the same care in choosing a mate as in the purchase of horses or cattle the "outbreeding" of dental caries is unlikely. Five factors evident in this problem have been detailed as: (*a*) genetic history, (*b*) developmental-nutritional background, (*c*) salivary-dental interrelationship, (*d*) oral micro-organisms, and (*e*) oral food debris. Dietary control active through factors, *b*, *d*, and *e* has given the best clinical results (over 80% experienced a definite reduction in caries incidence) in caries control for the caries-susceptible individual.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

INFANT FEEDING AND CIRCUMCISION

TO THE EDITOR:—*Please furnish information on the following subjects: (1) the age to start solid foods in healthy term infants, (2) what solid foods to start at what age and the reasons for the same, and (3) the best age, in days or weeks, for circumcision and the reasons for same.*

Allison B. Willeford, M.D., Molalla, Ore.

ANSWER.—1. The pendulum is swinging back from the very early starting of solid foods in healthy infants to a more moderate view. The reason is that infants thrive nutritionally on both regimens and there is less likelihood of digestion upsets. Under age 3 months, if the infant is on a proper composition milk formula, solid foods are not necessary until the infant acts hungry and demands them. This varies from infant to infant, some not being satisfied with the milk formula as young as 2 weeks of age, although the average is about 2 months. 2. Cereals are usually the first solid food started because they are easily digested and high in calories. In infants showing a dislike for cereal, strained fruits, such as applesauce, pears, or bananas may be mixed with the cereal or temporarily substituted for it. Strained vegetables, meats, or mixtures of them usually are introduced at age 3 months, in some infants earlier. These foods provide such body needs as iron, other minerals, vitamins, and proteins. Egg yolks and infant desserts, such as gelatin, custards and pudding may be started between the age of 4 and 5 months. The time-honored age for circumcision is about the end of the first week of life. The theoretical reason for this is that the coagulation of the infant's blood is somewhat diminished after birth but returns to normal by the 6th to 8th day of life. However, in some hospitals circumcision is done soon after birth on the first day of life without any unusual amount of bleeding.

CONVULSIONS OF CHILDHOOD

TO THE EDITOR:—*I would like information about fatal asphyxia resulting from the convulsions of childhood that are caused by rapidly rising temperature. Physicians generally seem to regard these convulsions as more alarming to parents than dangerous to the child. Having seen a few cases where the child became blue and limp and showed no sign of resuming respiration without aid, I wonder if these convulsions are entirely without mortality. I am not referring to convulsions from disease or injury primarily involving the central nervous system.*

Hugh A. Thompson, M.D., Raleigh, N. C.

ANSWER.—Death resulting from asphyxia during a febrile convulsion must be rare, if it occurs. However, it has been shown that febrile convulsions may involve more or less severe brain damage. About 5 to 10% of the children show residual paralysis, electroencephalogram changes, or other signs of brain injury, usually clearing up promptly but sometimes lasting several days or months. Various reports have indicated that from 5% to as high as 60% of children who suffered febrile convulsions developed epilepsy in later life. Certainly there is a direct relation between the duration and severity of the initial febrile convulsion and development of epilepsy later. Therefore, it is important that the convulsion be stopped as soon as possible with sedatives and measures to reduce the fever.

BUCKWHEAT POISONING

To the Editor:—*I would like information on fagopyrism (buckwheat poisoning).*

H. Wayne Glotfelty, M.D., Piqua, Ohio.

Answer.—Foremostly, fagopyrism is a disease of farm animals, notably cattle and sheep, attributed to photodynamic action but always subsequent to feeding on some member of fagopyrum, the genus to which the buckwheats belong. Much effort has been exerted to determine the precise photosensitizing agent, but this has not been accomplished. This agent appears to exist in the roots, stems, flowers, and grain of the buckwheats. Animals fed on buckwheat and then kept in semidarkness or total darkness do not develop the disease. Mild damage is reflected in skin surface injury. Severity may be apparent through intestinal and pulmonary hemorrhage, enteritis, bony necrosis, emaciation, and other manifestations. That fagopyrism may occur in man is doubted despite the tradition that buckwheat should not be eaten during the summer months less "buckwheat rash" appear. It is probably true that man is susceptible to the action of buckwheat in the provocation of light sensitivity, but the quantity ingested through the judicious consumption of buckwheat cakes appears to be insufficient. Extensive information may be found in Blum's "Photodynamic Action and Diseases Caused by Light" (American Chemical Society Monograph Series, no. 85, New York, Reinhold Publishing Corporation, 1941).

MONOCULAR DIPLOPIA

To the Editor:—*What are the causes of monocular diplopia?*

M.D., Pennsylvania.

Answer.—The causes of monocular diplopia are discussed by Duke-Elder (Textbook of Ophthalmology, vol. 4, London, England, Henry Kimptom, 1949, p. 3866). It may be due to (1) optical causes in the eye, (2) simultaneous conscious appreciation of two systems of visual projection, or (3) dissociative cerebral lesions. Optical causes include irregular corneal astigmatism, parenchymatous keratitis, and other influences disturbing corneal refraction; a double pupil or an iridodialysis; dissociation or subluxation of the lens; refractive irregularities due to incipient cataracts; fluid clefts or developmental anomalies of the lens; air bubbles, transparent foreign bodies, crystals, or cysts in the aqueous or vitreous fluid; and retinal detachment, particularly if the retina becomes inverted. Projectional diplopia arises from abnormal retinal correspondence, either through a single retinal image acquiring two associations of direction or by the image seen by the eccentric retinal point around which an abnormal system of correspondence is centered, being brought into consciousness simultaneously with the macular image. Central uniocular diplopia may occur in hemianopia and hemiamblyopia due to a calcarine lesion or to paresis of the extraocular muscles in association with a gross cerebral lesion.

FOODS RICH IN ARGININE

To the Editor:—*I would like a list of the foods rich in arginine. Is there any normal or abnormal process in the body that can increase the production of arginine endogenously? Have the organisms, chemicals, or enzymes been identified that produce the putrefaction of albuminous material in the intestinal tract, and can such a process take place in other tissues of the living organism? Are there any chemicals, drugs, or antienzymes known that may hinder or prevent such changes in albumen or proteins?*

Mitchell Burdick, M.D., Erie, Pa.

Answer.—Most proteins contain a good amount of arginine. Gelatin is one of the richest sources, with meat, legumes, eggs, and cereal proteins following in order. Arginine can be synthesized in the body, but the rate of synthesis is not sufficient to meet the requirements in rapidly growing animals. The organisms involved in the putrefaction of protein material in the intestinal tract are the coliform organisms. The enzymes involved are the decarboxylases and the deaminases. These enzymes have been studied largely in bacteria, but they have also been found in animal tissues. These enzymes are undoubtedly utilized in the normal metabolism of amino acids, but it is possible that under abnormal conditions compounds may be produced that have a deleterious effect. Little work has been done on the antienzymes related to these mechanisms. It is, of course, possible to reduce the number of coliforms in the intestinal tract with sulfonamides and antibiotics.

PENICILLIN

To the Editor:—*A 25-year-old man has been given occasional 10-day courses of procaine penicillin in sesame oil with aluminum monostearate injected every other day. There have been several courses a year for six years; it is given prophylactically to prevent otitis media, which never fails to occur as a complication of any head cold unless it be prevented by penicillin. Careful study has been made of the nasopharynx, and no further treatment is possible directed toward avoiding the susceptibility to ear complications. This man has never shown any untoward effects from penicillin. What is the likelihood of sensitization occurring from this therapy in the future? Several of the injection sites still have a palpable bump. Is this caused by the oil medium, and is there any danger of a malignant change in it?*

Edme Regnier, M.D., Salem, Mass.

Answer.—There is no clear-cut, statistical answer relative to the likelihood of the given patient developing sensitivity to procaine penicillin. Various reports are extant relative to sensitization of groups of patients to penicillin. These range from 3 to 10% when all reactions of sensitization are taken into account. It appears from certain of the reports that the more frequent the repetition of courses of penicillin in a patient, the greater the likelihood of sensitization. Definite information is available that people who are allergic to a number of other sensitizing substances become more easily sensitized to penicillin than do those patients who have no allergic history. Also, it is known that when penicillin is used topically the chances of sensitization appear to be greater. The "bumps" that have been described probably represent the characteristic action of the tissues toward certain vegetable oils. These occur not infrequently when any therapeutic agent containing oil is used intramuscularly. As far as known, there have been no reports of malignant lesions developing in these granulomas that follow the injection of penicillin in oil. It can be suggested that if benzathine penicillin is used instead of procaine penicillin in oil the development of these will not take place.

PREVENTION OF BLOCKING OF INDWELLING CATHETER

To the Editor:—*In* The Journal, *Aug. 6, 1955, page 1329, a question was asked regarding the formula for irrigating solution to use in an indwelling catheter in the urinary bladder to prevent blocking by deposition of crystals. I would agree with the answer but I do not feel that it is complete. Dr. Suby of Boston has been working for a number of years with various solutions with the aim of trying to dissolve urinary calculi. He contributed much to our information. His solution G is very useful in irrigating indwelling catheters to decrease the amount of blockage that takes place by the deposition of crystals. Many people will tolerate a catheter or a suprapubic tube for a period of time, but, sooner or later, urinary salts are deposited on the lining of the tube and, if allowed to go long enough, may completely block the lumen. By the use of Suby's solution G, while this cannot be entirely prevented for an indefinite period of time, still it may be slowed down so that the tube remains clean and free of crystals for a much longer period than it would be without them. Solution G contains citric acid monohydrate, 32.5 gm.; magnesium oxide, anhydrous, 3.84 gm.; sodium carbonate, anhydrous, 4.37 gm.; and distilled water, 1,000 cc. The reaction of the solution is pH 4. One must remember that to irrigate the bladder two or three times a day with an Asepto syringe and solution may cause the bladder to become irritable as a result of this acid pH. This may produce some slight tendency to bladder spasm and even on occasion some blood in the irrigating fluid; however, this will usually subside if the irrigations are stopped for two or three days and then resumed.*

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